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**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION**

IN RE APACHE CORP. SECURITIES LITIGATION

Case No. 4:21-cv-00575

SURREPLY REPORT

OF

LUCY P. ALLEN

September 8, 2023

TABLE OF CONTENTS

I.	Scope of Assignment	1
II.	Qualifications and Remuneration	1
III.	Materials Considered	1
IV.	The Nye Reply Report Fails to Show <i>Any</i> Evidence of Price Impact During the Focus Period, Ignores Academic and Market Evidence Analyzed in the Allen Report, and Instead Offers Unscientific Arguments That Appear Designed to Create Confusion and Obfuscation	2
	A. The Nye Reply Report completely ignores the Allen Report's analyses which demonstrated that the market's view of Alpine High's oil and wet gas reserves did not change during the Focus Period and Nye shows nothing to the contrary.....	2
	B. The Nye Reply Report incorrectly claims that the Allen Report ignored certain of Plaintiffs' allegations when the truth is that Nye ignores the Allen Report's analyses regarding those allegations	4
	1. Contrary to the Nye Reply Report's claim that the allegations regarding Alpine High being economic at low commodity prices were ignored in the Allen Report, Nye completely ignores the Allen Report's analyses demonstrating that the market was aware that deteriorating commodity prices would drive expectations of Alpine High downward before and during the Focus Period, and Nye shows nothing to the contrary.....	5
	2. The Nye Reply Report completely ignores the Allen Report's analyses that showed that there is no price impact from the alleged misrepresentations made before or during the Focus Period.....	8
	C. For the April 23, 2019 alleged corrective disclosure, the Nye Reply Report fails to show <i>any</i> evidence of price impact from the alleged misrepresentations - the Nye Reply Report's claims are unscientific, contradict his own event study method and his finding of market efficiency, and call into question how his proposed common damages methodology could even work.....	11
	1. Nye's claims regarding statistical significance are misleading and designed to create obfuscation – his claim that a non-statistically significant price reaction is meaningless is incorrect, contradicts his own methodology, and calls into question how his proposed common damages methodology could even work	11
	2. Nye's use of a cumulative four-day event window when no individual day is statistically significant is cherry-picked, unscientific, non-standard, and contradicts his own event study method	17
	3. If Nye had applied his cumulative four-day approach to his market efficiency analysis, the majority of the “event” days Nye found to be significant would no longer be significant, contradicting his own finding of market efficiency	21

4. The Nye Reply Report's claims regarding analyst commentary following the April 23, 2019 alleged corrective disclosure are misleading and incorrect – analysts consistently characterized the deferral as “expected” and “prudent” given the deteriorating commodity prices.....	24
D. For the October 25, 2019 alleged corrective disclosure, the Nye Reply Report fails to show <i>any</i> evidence of price impact from the alleged misrepresentations - failing to identify any new news about Alpine High, ignoring that the market commentary is essentially unanimous in directly attributing the stock price decline to Suriname speculation while not a single analyst attributes the stock price decline to new news about Alpine High	27
E. For the March 16, 2020 alleged corrective disclosure, the Nye Reply Report fails to show <i>any</i> evidence of price impact from the alleged misrepresentations - the Nye Reply Report fails to identify any new information in the allegedly corrective <i>Seeking Alpha</i> article, creates confusion by now claiming an entirely different alleged corrective disclosure (a Susquehanna report) that does not even mention Alpine High, and although unnecessary to do an event study if there is no corrective event, incorrectly adjusts the event study statistics for the record-high volatility on this date.....	31
1. The Nye Reply Report fails to identify any new information in the allegedly corrective <i>Seeking Alpha</i> article and creates confusion and obfuscation by now claiming an entirely different alleged corrective disclosure in a Susquehanna analyst report that does <i>not</i> even mention Alpine High.....	32
2. Although unnecessary to do an event study, the Nye Reply Report <i>incorrectly</i> adjusts for the record-high market volatility on this date; if Dr. Nye had properly followed the methodology in the paper he relies upon, he would find that there is <i>no</i> statistically significant reaction to the March 16, 2020 alleged corrective disclosure	37
F. The Nye Reply Report's claims that the Allen Report's big picture analysis is irrelevant are disingenuous and misleading - contrary to Plaintiffs' allegation that “when the truth regarding Defendant’s fraud emerged,” Apache’s stock price was “decimated” and dropped by “93% from its high,” Apache’s stock price moved in-line with the E&P industry during the Focus Period.....	41

I. SCOPE OF ASSIGNMENT

1. I have been asked by counsel for Defendants to review and comment on the Reply Report of Zachary Nye, Ph.D., dated August 11, 2023 (the “Nye Reply Report”).
2. I have previously submitted an expert report in this matter, dated June 16, 2023 (“Allen Report”).

II. QUALIFICATIONS AND REMUNERATION

3. My qualifications and remuneration were set forth in the Allen Report.

III. MATERIALS CONSIDERED

4. In preparing this report, I considered the materials previously considered in the Allen Report. In addition, I considered the following additional materials:

- a) Nye Reply Report, including materials considered and turnover; prior reports and depositions of Dr. Nye;
- b) Deposition of Lucy P. Allen, dated July 28, 2023 (“Allen Deposition”);
- c) Reply Memorandum of Law in Support of Lead Plaintiffs’ Motion for Class Certification and Appointment of Class Representative and Class Counsel (“Plaintiffs’ Reply Memo”), filed August 11, 2023;
- d) Intraday data for Apache from Bloomberg, L.P.;
- e) Analyst estimate data from I/B/E/S, obtained through FactSet Research Systems, Inc.;
- f) Additional analyst reports on Apache prior to the Focus Period from Refinitiv Eikon; and
- g) Court decisions in other cases.

IV. THE NYE REPLY REPORT FAILS TO SHOW ANY EVIDENCE OF PRICE IMPACT DURING THE FOCUS PERIOD, IGNORES ACADEMIC AND MARKET EVIDENCE ANALYZED IN THE ALLEN REPORT, AND INSTEAD OFFERS UNSCIENTIFIC ARGUMENTS THAT APPEAR DESIGNED TO CREATE CONFUSION AND OBFUSCATION

A. The Nye Reply Report completely ignores the Allen Report's analyses which demonstrated that the market's view of Alpine High's oil and wet gas reserves did not change during the Focus Period and Nye shows nothing to the contrary

5. Plaintiffs allege in the "Introduction" of their Complaint that Apache concealed that "the Alpine High area was too heavy on unprofitable 'dry' gas and too light on valuable oil and 'wet' gas" and claim that the "truth" regarding these alleged misrepresentations was disclosed through a series of partial alleged corrective disclosures.¹ The Allen Report showed that during the Focus Period no new information about Alpine High's oil and wet gas reserves or its mix was disclosed and that there was no change in the market's expectations about Alpine High's reserves or the mix of oil and wet gas vs. dry gas. Dr. Nye has no response to these analyses, completely ignores them, and shows *nothing* to the contrary.

6. Through a systematic review of analyst reports, the Allen Report demonstrated that no analysts changed their understanding about Alpine High's quantity of wet gas and oil reserves or its oil and wet gas vs. dry gas reserve mix during the Focus Period.² For example, as shown in the Allen Report, during the Focus Period analysts at Bank of America consistently described Alpine High as a "gas play" (*i.e.*, there was mainly gas rather than oil) and did not indicate they learned anything new about the quantity or mix of Alpine High's reserves, JP Morgan analysts repeatedly commented on the "gassier mix" of Alpine High, and Morgan Stanley and MUFG Bank analysts repeatedly characterized Alpine High as "NGL[Natural Gas Liquids]-rich." UBS analysts described Alpine High as "gas-weighted" early in the Focus Period in March 2018, consistently stated that Alpine High "predominantly produced NGL and natural gas" more than a year later in August 2019 and continued to estimate that Alpine High had more

¹ Complaint, ¶¶4, 303, 319.

² Allen Report, ¶¶100-102.

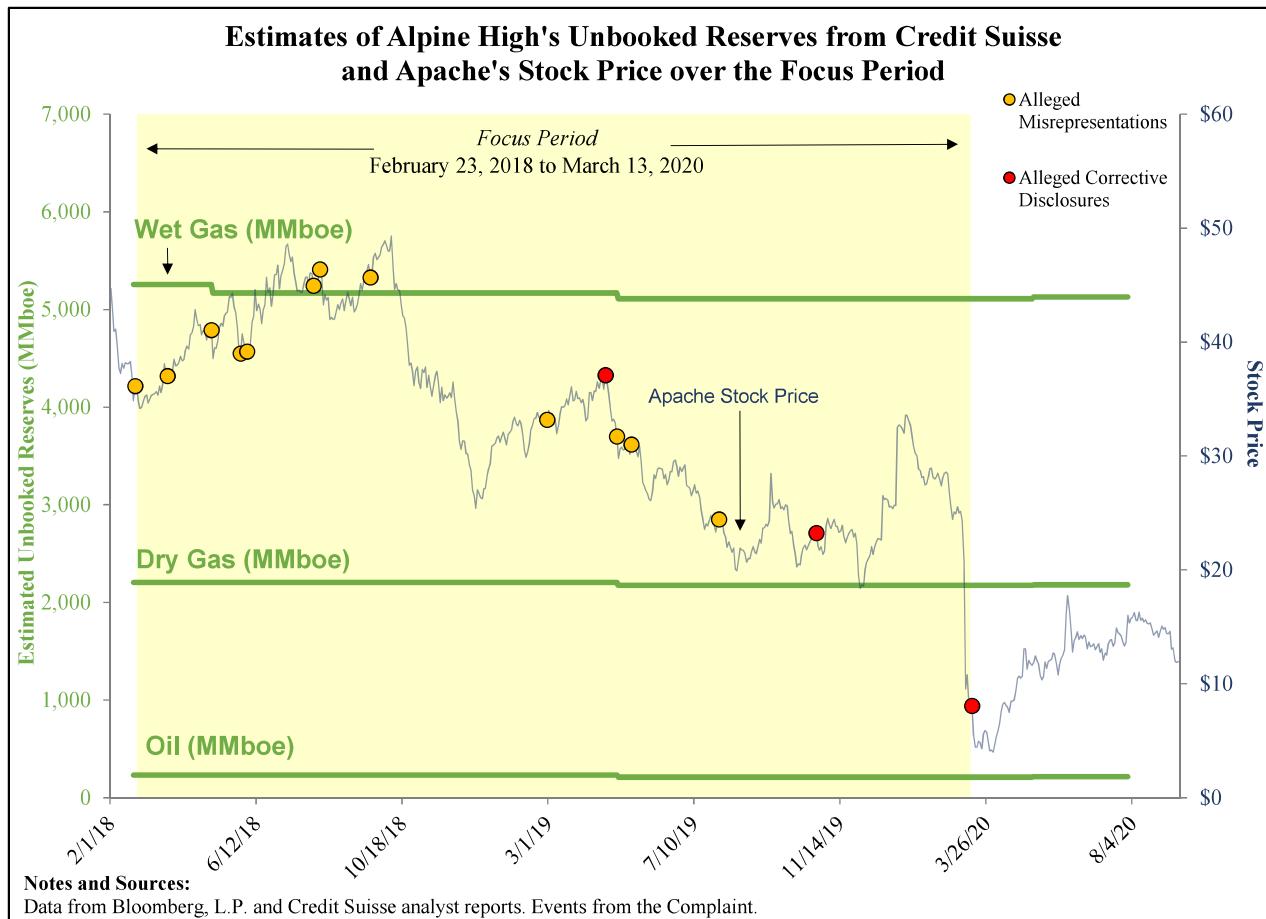
than 3,500 wet gas drilling locations in December 2019, close to the end of the Focus Period.³ Tellingly, Dr. Nye fails to point to even one analyst that changed its view on Alpine High’s quantity of oil and wet gas reserves or its oil and wet gas vs. dry gas reserve mix during the Focus Period – because no analyst’s views changed during that time period.

7. The Allen Report also demonstrated that analysts’ estimates of the quantity of oil and wet gas reserves at Alpine High and its mix did not change during the Focus Period. For example, the Allen Report showed that analysts at Credit Suisse essentially did not change their estimates of Alpine High’s “unbooked reserves” of oil, wet gas, and dry gas or its mix after any of the alleged misrepresentations or alleged corrective disclosures during the Focus Period.⁴ Further, after the end of the alleged Class Period and Focus Period, Credit Suisse continued to maintain essentially the same reserve estimates and mix for Alpine High. Thus, as shown in the chart below, during the Focus Period Credit Suisse analysts essentially did not change their estimates of the quantity and mix of Alpine High reserves after any of the alleged misrepresentations or alleged corrective disclosures.⁵

³ Allen Report, ¶¶100-102.

⁴ “Unbooked reserves” reflect the quantity of reserves in a play that are possible and probable, but not proven. See Allen Report, footnote 112.

⁵ Allen Report, ¶¶98-99.



8. In sum, as demonstrated in the Allen Report by a systematic review of analysts' estimates and descriptions of the quantity and mix of Alpine High's reserves, there was no change in the market's expectations about Alpine High's reserves or the mix of oil and wet gas vs. dry gas. Instead, throughout the Focus Period, analysts maintained their view that Alpine High was a gas-weighted, NGL-rich play. Dr. Nye has no response to these analyses, completely ignores them in the Nye Reply Report, and shows *nothing* to the contrary.

B. The Nye Reply Report incorrectly claims that the Allen Report ignored certain of Plaintiffs' allegations when the truth is that Nye ignores the Allen Report's analyses regarding those allegations

9. The Nye Reply Report incorrectly claims that the Allen Report ignored certain of Plaintiffs' allegations, when in reality, Dr. Nye ignores the Allen Report's analyses regarding those allegations. Dr. Nye claims the Allen Report ignored the alleged misrepresentations before the Focus Period and in particular the alleged misrepresentations about Alpine High being economic at low commodity prices. Dr. Nye is incorrect. The Allen Report did address these

alleged misrepresentations and showed that there is no price impact during the Focus Period from these alleged misrepresentations.⁶

- 1. Contrary to the Nye Reply Report's claim that the allegations regarding Alpine High being economic at low commodity prices were ignored in the Allen Report, Nye completely ignores the Allen Report's analyses demonstrating that the market was aware that deteriorating commodity prices would drive expectations of Alpine High downward before and during the Focus Period, and Nye shows nothing to the contrary**

10. Dr. Nye claims that the Allen Report ignored Plaintiffs' allegations regarding Alpine High being economic at low prices.⁷ However, Dr. Nye ignores that the Allen Report explicitly analyzed the alleged misrepresentations pertaining to the economics of Alpine High at low commodity prices and found that the market was aware before the Focus Period began that deteriorating commodity prices would drive expectations about Alpine High downward.⁸

11. Dr. Nye cites to an alleged misrepresentation on February 23, 2017 (one year before the start of the Focus Period) in Apache's conference call discussing financial results for FY16 where Plaintiffs allege Defendants misstated that "even in the lower commodity price environment, this play [Alpine High] is going to be very economic."⁹ Dr. Nye mistakenly claims that the Allen Report failed to analyze price impact from this alleged misrepresentation. As explained in the Allen Report, not one analyst mentioned or incorporated this alleged misstatement into their valuation of Apache.¹⁰ Furthermore, as detailed in the Allen Report, following this alleged misstatement, analysts explicitly stated that weak commodity prices would challenge the economics of Alpine High.¹¹

12. Dr. Nye also cites to an alleged misrepresentation on February 22, 2018 in Apache's conference call discussing financial results for FY17 where Plaintiffs allege

⁶ See for example, Allen Report, ¶¶35-126.

⁷ Nye Reply Report, ¶16.

⁸ Allen Report, ¶¶43-44.

⁹ Nye Reply Report, ¶17 and Complaint, ¶224.

¹⁰ Allen Report, ¶43.

¹¹ For example, in a report issued on February 23, 2017, analysts at Bank of America stated that a "key risk" to Apache's Alpine-High-gas-driven growth would be worsened Waha Hub prices due to a surge in local production. See also, Bank of America analyst report, dated February 24, 2017. See also, Allen Report, ¶43.

Defendants misstated that “Alpine High ‘is going to really hum below \$2 [prices] on the gas side,’” and ““we’ve run many cases on the downside. We would not be making this type of investment on the midstream or the upstream side if we thought there was a sensitivity that was close to anything that would come into making it not work under very, very low gas and NGL and oil prices.””¹² Dr. Nye similarly mistakenly claims that the Allen Report failed to analyze price impact from this alleged misrepresentation. As explained in the Allen Report, not one analyst mentioned or incorporated this alleged misstatement into their valuation of Apache.¹³ On the contrary, as detailed in the Allen Report, following this alleged misstatement (and still prior to the start of the Focus Period), analysts explicitly stated that weak commodity prices would challenge the economics of Alpine High.¹⁴ Analysts continued to express this sentiment throughout the Focus Period.¹⁵

13. Thus, the Allen Report clearly addressed these alleged misrepresentations showing not only that no analyst repeated the statement when made but more importantly that analysts, after the alleged misrepresentations, said the opposite of what Plaintiffs are alleging – *i.e.*, analysts explicitly said that Alpine High would be negatively affected if prices dropped.¹⁶ The Allen Report not only explicitly addressed these alleged misrepresentations but also demonstrated that they could have no price impact during the Focus Period because analysts

¹² Nye Reply Report, ¶17 and Complaint, ¶256.

¹³ Allen Report, ¶43.

¹⁴ For example, in a report issued on February 22, 2018, Bank of America analysts stated that there was “no visibility” of the long-term commodity price outlook, which would challenge Apache’s investment in Alpine High. The analysts further stated having “conviction” about the value of Apache’s gas-driven growth was “too difficult” and reiterated their “underperform” rating of Apache’s stock. Bank of America analyst report, dated February 22, 2018. As another example, a Credit Suisse analyst report on February 22, 2018 stated that Alpine High “naysayers” were unlikely to change their view about the play, as investor concerns about weakening Waha Hub prices continued to grow. Credit Suisse analyst report, dated February 22, 2018. See also, Allen Report, ¶43.

¹⁵ See for example, Stephens analyst report, dated April 23, 2019, MUFG Bank analyst report, dated May 2, 2019, and Barclays analyst report, dated October 21, 2019.

¹⁶ Note Dr. Nye quotes other alleged misstatements in ¶17 of his Reply Report that either no analysts repeated or are not regarding Alpine High being economic at low prices. In particular, not one analyst repeated the September 7, 2016 alleged misstatement (“even at \$40/barrel oil and \$2.50 gas, ‘the returns are still significantly high’”), not one analyst repeated the September 28, 2016 alleged misstatement and it only discusses oil prices, not gas prices (“contains some of the cheapest oil and gas to produce not just in the U.S., but in the world, economic to drill at prices as low as \$40 a barrel”), and the other alleged misstatements are not about Alpine High being economic at low commodity prices.

before the Focus Period already believed that Alpine High would be negatively affected if prices fell.

14. Moreover, Dr. Nye's claim that the Allen Report "fails to consider whether the alleged corrective events caused investors to change their views regarding the economics of the Alpine High play, including with respect to oil, wet gas/NGLs, and dry gas, and particularly in a low-price environment for those commodities," is incorrect as the Allen Report showed that the market was already aware that weak commodity prices would challenge Alpine High's economics.¹⁷

15. In addition, Dr. Nye fails to recognize that commodity prices did in fact go substantially *below* the \$2-\$2.50 levels mentioned by the Company in the alleged misrepresentations.¹⁸ As shown in the Allen Report and in the chart below, Waha Hub natural gas spot prices went below \$2 starting in March 2018, right after the beginning of the Focus Period, and stayed consistently below \$2 from early 2019, before the first Focus Period alleged corrective disclosure (April 23, 2019), until after the end of the alleged Class Period. (In the chart below, gas prices above \$2 are shown in blue and prices below \$2 are shown in pink.) Prices even went *negative* in late March 2019, right before the first Focus Period alleged corrective disclosure, and remained close to zero for several months.¹⁹ Contemporaneous market commentary explained that this situation of negative gas prices meant "[c]ompanies increasingly [were] having to pay buyers in the Permian Basin to take their natural gas."²⁰ At negative or close to zero gas prices, Alpine High would be uneconomic and the market was aware of this since before the beginning of the Focus Period and during it. For example, analysts at Barclays commented that "current commodity prices" were making Alpine High "uneconomic," analysts at MUFG Bank stated that Waha prices would "drive [Apache's] decision making" at Alpine

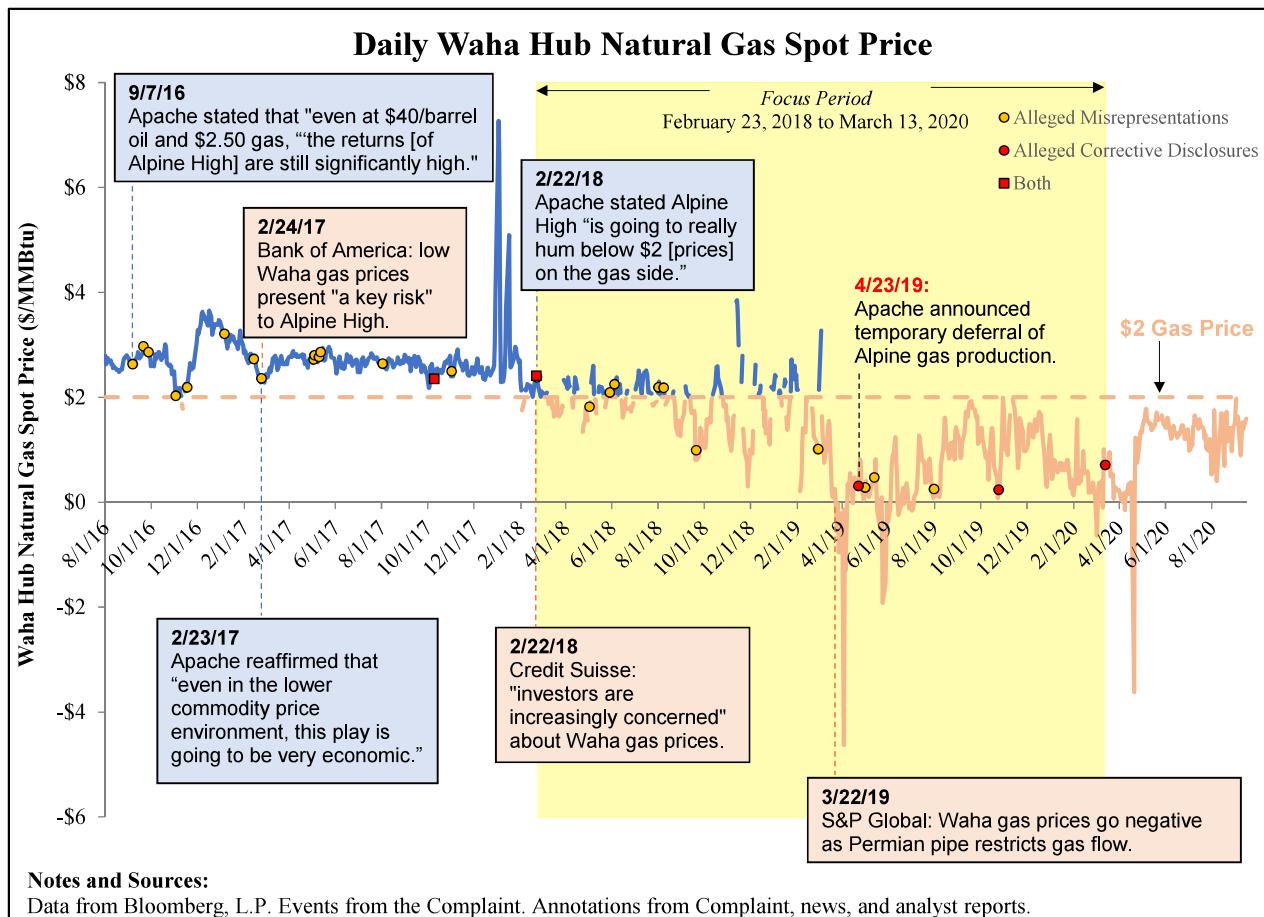
¹⁷ Nye Reply Report, ¶18 and Allen Report, ¶43.

¹⁸ Nye Reply Report, ¶17.

¹⁹ See for example, Allen Report, ¶¶55, 117.

²⁰ "Free Permian Gas More Common As Pipeline Bottlenecks Worsen," *Dow Jones Newswires*, March 25, 2019. See also, "Waha Hub gas prices hit negative territory as Permian pipe restricts flow," *S&P Global Market Intelligence*, March 22, 2019 and "Natural Gas Is Stuck in a Vicious Cycle," *Wall Street Journal*, July 30, 2019 ("Producers in West Texas, drilling primarily for oil, are getting natural gas as a byproduct in their drilling process. The resource is plentiful and cheaper than free—bringing it to market costs more than the market price. This spring, the price of natural gas at a trading hub near Midland, Texas, dropped to as low as negative \$9 per million British thermal units.").

High, analysts at Bank of America stated that weak gas prices made it “difficult to have conviction on value,” and analysts at Stephens commented that “depressed Waha pricing [was] hampering Alpine cash generative capabilities.”²¹



2. The Nye Reply Report completely ignores the Allen Report’s analyses that showed that there is no price impact from the alleged misrepresentations made before or during the Focus Period

16. The Nye Reply Report claims that the Allen Report did not “offer any opinion pertaining to the alleged misrepresentations or corrective disclosures” issued prior to the Focus Period and does not address “whether any of the alleged corrective disclosures made during the Pre-Focus Period fully dissipated all of the positive price impact created by the Pre-Focus Period

²¹ Barclays analyst report, dated October 21, 2019, MUFG analyst report, dated May 2, 2019, Bank of America analyst report, dated February 22, 2018, and Stephens analyst report, April 23, 2019.

alleged misstatements.”²² However, Dr. Nye completely ignores the Allen Report’s analyses that directly address these issues.

17. Dr. Nye incorrectly claims that the Allen Report offered no opinion pertaining to the alleged misrepresentations preceding the Focus Period. Dr. Nye flatly ignores that the Allen Report showed that there was no link between any of the alleged misrepresentations during the alleged Class Period (including those preceding the Focus Period) and the stock price during the Focus Period.²³ The Allen Report showed that the alleged inflation (if any) did not come out of Apache’s stock price during the Focus Period, including for example through a detailed analysis of each of the alleged corrective disclosures during the Focus Period that showed no statistically significant decline from the alleged misrepresentations.²⁴

18. Dr. Nye’s claims regarding the amount of alleged inflation that may have come out or “dissipated” before the Focus Period are irrelevant. Dr. Nye claims that the alleged misrepresentations during the Focus Period “served to maintain” and not create, the alleged inflation in Apache’s stock price.²⁵ Since the Allen Report showed that this alleged inflation (if any) did not come out of Apache’s stock price during the Focus Period, including on any of the alleged corrective disclosures, there is no link between any of the alleged misrepresentations during the alleged Class Period and Apache’s stock price movement during the Focus Period. The Allen Report demonstrated repeatedly with numerous analyses that the alleged inflation (if any) did not come out of Apache’s stock price during the Focus Period, including through a detailed analysis of each of the alleged corrective disclosures during the Focus Period that showed that there was no statistically significant decline from the alleged misrepresentations, as well as an analysis that showed that the market did not change its view about Alpine High’s oil and wet gas reserves, Apache’s stock moved in-line with the E&P industry, and the downward changes in expectations about Alpine High were driven by deteriorating commodity prices.²⁶

²² Nye Reply Report, ¶¶7, 9.

²³ See for example, Allen Report, ¶¶35-126. See also, Allen Deposition, 78:8-20.

²⁴ See for example, Allen Report, ¶¶35-126.

²⁵ Nye Reply Report, ¶10 and Plaintiffs’ Reply Memo, pp. 9-11.

²⁶ Allen Report, ¶¶35-126.

19. Simple logic dictates that in this situation determining whether any alleged inflation came out before the Focus Period is irrelevant. Since the alleged inflation (if any) did not come out of Apache's stock price during the Focus Period, then either i) the pre-Focus Period alleged misrepresentations had no impact at all, ii) the alleged inflation from the pre-Focus Period alleged misrepresentations came out of Apache's stock price before the Focus Period, or iii) the alleged inflation was still in the stock after the alleged Class Period and is therefore not relevant to Plaintiffs' allegations in this case.

20. Dr. Nye does not refute the Allen Report's analysis of each of the alleged misrepresentations during the Focus Period, which found no evidence of a price reaction to the alleged misrepresentations when made. In particular, the Allen Report analyzed the stock price reaction and market and analyst commentary following each of the alleged misrepresentations during the Focus Period and found that there was no statistically significant price increase and/or any indication that any analyst increased their price target or valuation of Apache due to the alleged misrepresentations.²⁷

21. Thus, the Allen Report showed there is no link between any of the alleged misrepresentations during the alleged Class Period and Apache's stock price movement during the Focus Period.

²⁷ Allen Report, ¶¶35-45.

C. For the April 23, 2019 alleged corrective disclosure, the Nye Reply Report fails to show *any* evidence of price impact from the alleged misrepresentations - the Nye Reply Report's claims are unscientific, contradict his own event study method and his finding of market efficiency, and call into question how his proposed common damages methodology could even work

1. Nye's claims regarding statistical significance are misleading and designed to create obfuscation – his claim that a non-statistically significant price reaction is meaningless is incorrect, contradicts his own methodology, and calls into question how his proposed common damages methodology could even work

22. Dr. Nye claims that a non-statistically significant price reaction is essentially meaningless and is not evidence supporting a lack of price impact.²⁸ However, this is incorrect, contradicts the very methodology Dr. Nye uses to establish reliance through the indirect test of market efficiency, and calls into question how Dr. Nye's proposed common damages methodology could even work.

23. Dr. Nye supports his claim that a non-statistically significant price reaction is not evidence supporting a lack of price impact by disingenuously quoting excerpts from a decision that is clearly basing its comments on a classic misunderstanding of statistics. Dr. Nye misleadingly omits the quotes from that decision that show this clear misunderstanding of statistics. In particular, Dr. Nye quotes from the decision in *Rooney v. EZCORP, Inc.* (“EZCORP”) to support his claim that a lack of a statistically significant price reaction does not show a lack of price impact.²⁹ However, the *EZCORP* discussion is based on a complete

²⁸ Nye Reply Report, ¶¶21, 61, 67, 69.

²⁹ Nye Reply Report, ¶¶21, 69 and footnotes 87, 242. Dr. Nye also cites to another decision (*St. Clair County Employees' Retirement System v. Acadia Healthcare Company, Inc.*), but this decision cites to *EZCORP* and thus falls under the same statistical misunderstanding.

Dr. Nye cites to additional decisions that note that only a lack of a statistically significant price reaction “does not prove lack of price impact with scientific certainty.” See for example, Nye Reply Report, ¶69 and *Carpenters Pension Trust Fund of St. Louis, et al. v. Barclays PLC, et al.*, Case No. 12-cv-5329 (SAS), Opinion and Order, dated August 20, 2015, p. 60. Nothing in the Allen Report would refute that point. As I made clear in my deposition, statistical tests rarely if ever prove anything with scientific certainty. See Allen Deposition, 90:20-91:4. Note that by that same logic the mere presence of a statistically significant price reaction also does not prove price impact “with scientific certainty.”

Moreover, the Allen Report relied on more than just a lack of a statistically significant reaction for its finding of no price impact. For example, the Allen Report showed that the allegedly corrective information, the deferral of gas production at Alpine High, was not a surprise to the market but was expected given the recent deterioration

misunderstanding of statistical significance. The *EZCORP* decision mistakenly claims (which was omitted in the Nye Reply Report): “[t]hese p-values suggest there is a 77 percent chance the corrective disclosures identified by Plaintiff negatively impacted EZCORP’s stock price on these dates.”³⁰ A p-value of 0.23 does *not* mean that one is 77% confident that a significant event happened. Instead, it means that there is only a 23% chance that a price reaction of the same magnitude would be observed given the range of normal stock price volatility.³¹ This is the *exact* type of statistical misinterpretation the Allen Report explained in detail and Dr. Nye does not dispute. Specifically, the Allen Report stated that:

Statistical significance is commonly misinterpreted. One example of these misinterpretations is that if a price reaction is statistically significant at the 23% level (*i.e.*, the p-value is 0.23), it means that one can be 77% confident that the stock price reacted to the event. However, this is *flatly wrong*.³² [Allen Report, ¶30]

24. This flatly wrong interpretation of statistical significance is exactly the interpretation the court in *EZCORP* mistakenly made. In fact, the Allen Report’s explanation of

of regional gas prices. The Allen Report also showed that the allegedly corrective information did not change the market’s expectations about Alpine High’s reserves or the mix of oil and wet gas vs. dry gas. Allen Report, ¶¶47-62.

³⁰ *Rooney v. EZCORP, Inc.* 330 F.R.D. 439 450 (W.D. Tex. 2019).

³¹ See, for example, Freedman, David A., and David H. Kaye, “Reference Guide on Statistics,” *Reference Manual on Scientific Evidence* (Washington, D.C.: Federal Judicial Center, 3rd ed., 2011) p. 250.

³² See, for example:

- Freedman, David A., and David H. Kaye, “Reference Guide on Statistics,” *Reference Manual on Scientific Evidence* (Washington, D.C.: Federal Judicial Center, 3rd ed., 2011) p. 252. (“[I]f results are significant at the 5% level, it is tempting to conclude that the null hypothesis has only a 5% chance of being correct. This temptation should be resisted.”); and p. 282. (“However, the 5% is often taken to be the chance of the null hypothesis given the data. This misinterpretation is commonplace in the social science literature, and it appears in some opinions describing expert testimony.”).
- Barnes, David W., “Too many probabilities: statistical evidence of tort causation,” *Law and Contemporary Problems* 64(191): 2001, p. 208. (“There is no convenient way to translate the .05 p-value into a ninety-five-percent confidence that the fact probability is correct, credible, believable, or true.”).

See, in addition, the following video from Khan Academy on “P-values and significance tests” for a simpler explanation of this concept. (“Sometimes people confuse this [the p-value] and they say: Hey is this the probability that the null hypothesis is true given the sample statistics that we got? And I would say, clearly, no, that is not the case. We are not trying to gauge the probability that the null hypothesis is true or not.”) Khan Academy, accessed at: <https://www.khanacademy.org/math/ap-statistics/xfb5d8e68:inference-categorical-proportions/idea-significant-tests/v/p-values-and-significance-tests>.

this common statistical misinterpretation used the exact same p-value (0.23) as the one used by the court in *EZCORP*. However, Dr. Nye still relied upon the *EZCORP* decision to support his claim that a lack of a statistically significant price reaction does not show a lack of price impact.

25. As explained in the Allen Report, and as stated by the former president of the American Financial Association, it is “incorrect to interpret the test as providing $(1 - p\text{-value})\%$ confidence that the effect being tested is ‘true.’”³³ In other words, it is incorrect to interpret the test as providing 77% confidence that the effect being tested is true. Instead, it means that there is only a 23% chance that a price reaction of the same magnitude would be observed given the range of normal stock price volatility.³⁴ Dr. Nye himself states that the p-value is the “conditional probability of observing a return as extreme as, or more extreme than, the return at issue.”³⁵ The conditional probability of observing a return as extreme is *not* the same as the likelihood that the effect being tested is true. Thus, in other words, Dr. Nye is correctly stating in his report the meaning of statistical significance while disingenuously relying on a decision that clearly has misunderstood the meaning.

26. A practical example that the lack of a statistically significant test result does provide important evidence is the FDA’s approval requirement for trials on drug efficacy. Specifically, if a statistical test of the hypothesis that a drug is more effective than a placebo fails at the 5% statistical significance level (*i.e.*, there is no statistically distinguishable difference in efficacy between the drug and a placebo), then the drug is rejected—the lack of statistical significance provides evidence that the drug is not better than a placebo.³⁶

³³ Harvey, Campbell R., “Presidential Address: The Scientific Outlook in Financial Economics,” *The Journal of Finance* 77(4): 2017, p. 1410 (“The p-value does not indicate whether the null hypothesis or the underlying experimental hypothesis is ‘true.’ It is also incorrect to interpret the test as providing $(1 - p\text{-value})\%$ confidence that the effect being tested is true.”). See also, Allen Report, ¶30.

³⁴ See, for example, Freedman, David A., and David H. Kaye, “Reference Guide on Statistics,” *Reference Manual on Scientific Evidence* (Washington, D.C.: Federal Judicial Center, 3rd ed., 2011) p. 250.

³⁵ Nye Reply Report, ¶62.

³⁶ See, for example, Kennedy-Shaffer, Lee, “When the Alpha is the Omega: P-Values, ‘Substantial Evidence,’ and the 0.05 Standard at FDA,” *Food Drug Law Journal*, 72(4): 2017, pp. 595-635, which describes the history of the use of statistics by the FDA in the decision-making process for new drugs.

27. Moreover, the lack of a statistically significant price reaction is considered by academics,³⁷ as well as courts,³⁸ as providing compelling evidence of no price impact. For example, according to the Second Circuit's recent decision in *Arkansas Teacher Retirement System v. Goldman Sachs Group, Inc.*, ("Goldman"), "[i]f the stock price movement is indistinguishable from random price fluctuations, it cannot be attributed to company-specific information announced on the event date."³⁹ As another recent example, the court in *Ramirez v. Exxon Mobil Corp.* ("Exxon") concluded that Defendants had shown no price impact for an alleged corrective disclosure by showing the lack of a statistically significant reaction at the 5% level.⁴⁰ In addition, the Reference Manual on Scientific Evidence, which assists judges in managing cases involving complex scientific and technical evidence, states that "**when studies**

³⁷ See, for example, Freedman, David A., and David H. Kaye, "Reference Guide on Statistics," *Reference Manual on Scientific Evidence* (Washington, D.C.: Federal Judicial Center, 3rd ed., 2011), p. 254.

See also the study in the *International Journal of Economics and Finance* which concludes there is no impact from an event given the lack of a statistically significant reaction: "On the announcement day (day zero), the abnormal return for the bank sector is -0.066% and for both the service and industrial sector is -0.293% and -0.368% respectively, with no significant impact as the t-statistics accept the null hypothesis that the downgrading event has no impact." See Abdeldayem, Marwan M. and Ramzi Nekhili, "Credit Rating Changes and Stock Market Reaction in the Kingdom of Bahrain," *International Journal of Economics and Finance*, 8(8):2016, pp. 23-32. See also Fisher, Franklin M., "Multiple Regression in Legal Proceedings," *Columbia Law Review*, 80(4): 1980.

³⁸ See, for example, *Erica P. John Fund, Inc. v. Halliburton Company*, No. 3:02-CV-1152-M (N.D. Tex. July 25, 2015), ("To show that a corrective disclosure had a negative impact on a company's share price, courts generally require a party's expert to testify based on an event study that meets the 95% confidence standard [...] Coffman found an intraday statistically significant price reaction on Day 1 only at a 90% confidence level, which is less than the 95% confidence level both experts require in their regression analyses and which the Court finds is necessary. [...] In contrast, with and without a multiple comparison adjustment, Allen found no price impact on December 21, 2000. The Court agrees with Halliburton that there was no price impact on December 21, 2000, and finds that Defendants have rebutted the *Basic* presumption as to the allegedly corrective disclosure made on that date.").

See also, *Arkansas Teacher Retirement System v. Goldman Sachs Group, Inc.*, No. 22-484, 2023 WL 5112157 (2d Cir. August 10, 2023), p. 20 and *Ramirez v. Exxon Mobil Corp.*, Civil Action 3:16-CV-03111-K (N.D. Tex. August 21, 2023), p. 38.

³⁹ *Arkansas Teacher Retirement System v. Goldman Sachs Group, Inc.*, No. 22-484, 2023 WL 5112157 (2d Cir. August 10, 2023), p. 20.

⁴⁰ *Ramirez v. Exxon Mobil Corp.*, Civil Action 3:16-CV-03111-K (N.D. Tex. August 21, 2023), p. 38, ("The Court concludes that Defendants have rebutted the *Basic* presumption by a preponderance of the evidence by showing that the alleged November 9, 2015, Corrective Disclosure did not impact Exxon Mobil's stock price. Dr. Ferrell analyzed the reaction of Exxon Mobil's stock price to the November 9, 2015, article and found no statistically significant negative price reaction.") and p. 31 ("The Experts agree that price fluctuations should be statistically significant before the Court rejects the possibility that the fluctuations are merely the result of random price movements.").

have a good chance of detecting a meaningful association, failure to obtain significance can be persuasive evidence that there is nothing much to be found.”⁴¹

28. Dr. Nye also claims that “given the low statistical power of single-firm event studies,” the absence of a statistically significant price reaction is meaningless.⁴² However, this means that Dr. Nye is admitting that his own event study that he uses to test whether information is rapidly incorporated into the stock price (an indirect test of reliance) is an unfair test that he would rely upon if it shows results in favor of the stock price incorporating news but that he would call meaningless if it showed the opposite result. Moreover, this biased view of an event study critically calls into question how Dr. Nye’s proposed common damages methodology, which relies on an event study, could even work. Given that Plaintiffs’ and Dr. Nye’s proposed common damages methodology includes the use of an event study to determine “Company-specific price movements caused by the revelation of true facts related to the alleged fraud,” this clearly indicates that Plaintiffs and Dr. Nye contend their proposed event study approach has a “good chance of detecting a meaningful association.”⁴³ Yet, if the result is not statistically significant, Dr. Nye could and presumably would still argue that the statistically insignificant price movement should be included in damages because the absence of statistical significance is meaningless. This “heads I win, tails I win anyway” approach is unscientific and makes no sense in a field that is replete with analyses of statistical significance. Instead, consistent with the academic literature and common sense, if Dr. Nye’s own event study yields no statistically significant price reaction, it does provide evidence in favor of no price impact.⁴⁴

⁴¹ Freedman, David A., and David H. Kaye, “Reference Guide on Statistics,” *Reference Manual on Scientific Evidence* (Washington, D.C.: Federal Judicial Center, 3rd ed., 2011), p. 254, emphasis added.

See, also, the study in the *International Journal of Economics and Finance* which concludes there is no impact from an event given the lack of a statistically significant reaction: “On the announcement day (day zero), the abnormal return for the bank sector is -0.066% and for both the service and industrial sector is -0.293% and -0.368% respectively, with no significant impact as the t-statistics accept the null hypothesis that the downgrading event has no impact.” See, Abdeldayem, Marwan M. and Ramzi Nekhili, “Credit Rating Changes and Stock Market Reaction in the Kingdom of Bahrain,” *International Journal of Economics and Finance*, 8(8):2016, pp. 23-32. See also, Fisher, Franklin M., “Multiple Regression in Legal Proceedings,” *Columbia Law Review*, 80(4): 1980.

⁴² Nye Reply Report, ¶67.

⁴³ Nye Report, ¶67. See also, Freedman, David A., and David H. Kaye, “Reference Guide on Statistics,” *Reference Manual on Scientific Evidence* (Washington, D.C.: Federal Judicial Center, 3rd ed., 2011), p. 254.

⁴⁴ This assumes that there is no confounding news.

29. Moreover, according to Dr. Nye's arguments, including that there is "no requirement in economics that material information must induce a price reaction that is considered to be statistically significant at a particular level," Dr. Nye's proposed common damages methodology would not be able to measure damages on a class-wide basis since there would be no way to statistically distinguish the alleged price reaction to the April 23, 2019 alleged corrective disclosure from noise or unrelated news, because Dr. Nye would never claim that any test of statistical significance, no matter what the result, is evidence in favor of noise over an alleged corrective disclosure.⁴⁵

30. Further, Plaintiffs claim that they do not need to prove individualized reliance on the alleged misrepresentations since Apache's stock traded in an efficient market that reflected all publicly available information, including the alleged misrepresentations, and thus there is a link between Apache' stock price and the alleged misrepresentations.⁴⁶ In particular, Plaintiffs rely on an indirect test of reliance: "courts may presume that investors trading in efficient markets indirectly rely on public, material misrepresentations through their 'reliance on the integrity of the price set by the market.'"⁴⁷ Plaintiffs rely on Dr. Nye's event study to test the responsiveness of Apache's stock price to new information and show Apache traded in an efficient market, and thus try to indirectly show that there is a link between the stock price and the alleged misrepresentations.⁴⁸ (Plaintiffs show this link indirectly since Dr. Nye tests earnings announcements and not the actual alleged misrepresentations.) However, Dr. Nye's own event study shows that there is *no* statistically detectable reaction to the alleged correction of the alleged misrepresentations on April 23, 2019. In other words, using Dr. Nye's own test, but applying it *directly* to the alleged misrepresentations and their alleged correction, shows that there is no link between Apache's stock price during the Focus Period and the alleged misrepresentations.

31. Dr. Nye ignores that the Allen Report found that there is no price impact from the April 23, 2019 alleged corrective disclosure based not only on the absence of a statistically significant price reaction but also on other substantial market evidence. For example, the Allen

⁴⁵ Nye Reply Report, ¶68.

⁴⁶ Plaintiffs' Motion for Class Certification, pp. 15-16.

⁴⁷ *Basic Inc. v. Levinson*, 485 U.S. 224 (1988).

⁴⁸ Plaintiffs' Motion for Class Certification, p. 20.

Report showed that the allegedly corrective information, the deferral of gas production at Alpine High, was not a surprise to the market but was expected given the recent deterioration of regional gas prices. The Allen Report also showed that the allegedly corrective information did not change the market's expectations about Alpine High's reserves or the mix of oil and wet gas vs. dry gas.⁴⁹ Dr. Nye either has no response to this substantial market evidence or, as will be discussed below, makes claims that are misleading and incorrect. As I made clear in my deposition, statistical tests rarely if ever prove anything with scientific certainty.⁵⁰ (Note by that same logic, the mere presence of a statistically significant price reaction also does not prove price impact with scientific certainty.)

2. Nye's use of a cumulative four-day event window when no individual day is statistically significant is cherry-picked, unscientific, non-standard, and contradicts his own event study method

32. Dr. Nye claims that the Allen Report "ignores the statistically significant multi-day price declines observed" following the April 23, 2019 alleged corrective disclosure.⁵¹ This is flatly incorrect. The Allen Report did not ignore the days following the April 23, 2019 alleged corrective disclosure, and in fact showed that according to both Dr. Nye's event study and the alternative event study, there was no statistically significant decline in Apache's stock price on April 23, 24, 25, and 26, 2019.⁵²

33. The Nye Reply Report further claims that according to Dr. Nye's event study model, "the two-, three- and four-day declines in Apache's stock price are statistically significant at the 92.59%, 98.96% and 99.01% confidence levels," and according to the alternative event study model, "the three- and four-day stock price declines are likewise statistically significant at the 94.33% and 96.56% confidence levels."⁵³ Referring to these statistical results is non-standard, unscientific, contradicts Dr. Nye's first report and clearly the result of cherry-picking.

34. First, Dr. Nye's Reply Report disingenuously fails to say that *not one* individual day during the cumulative four-day event window was statistically significant, and importantly

⁴⁹ Allen Report, ¶¶48, 53-62.

⁵⁰ Allen Deposition, 90:20-91:4.

⁵¹ Nye Reply Report, ¶23.

⁵² Allen Report, ¶¶47-52.

⁵³ Nye Reply Report, ¶23.

not April 23, 2019, the date on which the allegedly corrective information was revealed *pre-market open*.⁵⁴ Thus, the market had a full day to impound the allegedly corrective information for the event study on April 23. Moreover, even ignoring how scientifically unsound Dr. Nye's analysis is, his cumulative two-day event window is *not* statistically significant under both models and his cumulative three-day event window is *not* statistically significant under the alternative event study model. The figure below is a table from the Nye Reply Report where I have indicated the non-statistically significant dates/windows in orange. As the table shows, the price reactions on each individual day were *not* statistically significant, as well as the cumulative two-day event window (under both event study models), and the cumulative three-day event window (under the alternative event study model).

Nye Reply Report Table for April 23, 2019 Alleged Corrective Disclosure

Event Window	Nye Event Study			Allen Alternative Event Study		
	Company-Specific Return	t-Stat	Confidence Level	Company-Specific Return	t-Stat	Confidence Level
4/23/2019	-1.45%	-1.05	70.64%	-1.37%	-0.99	67.77%
4/24/2019	-2.04%	-1.48	86.06%	-0.75%	-0.54	41.28%
4/25/2019	-2.67%	-1.94	94.62%	-2.47%	-1.78	92.38%
4/26/2019	-1.01%	-0.73	53.29%	-1.31%	-0.94	65.11%
2-Day Event Window (4/23-24/2019)	-3.49%	-1.79	92.58%	-2.13%	-1.09	72.12%
3-Day Event Window (4/23-25/2019)	-6.16%	-2.58	98.96%	-4.60%	-1.91	94.33%
4-Day Event Window (4/23-26/2019)	-7.17%	-2.60	99.01%	-5.91%	-2.13	96.56%

Source: Nye Report Exhibit 11; NERA_019129

35. Dr. Nye is not claiming and has not shown that there was any new fraud-related information released over any of the three days following April 23. If Dr. Nye is making the claim that it takes four days to begin to statistically find an effect of the alleged corrective disclosure, this claim would be completely contrary to Dr. Nye's own finding that Apache traded in an efficient market where its stock price responds "promptly" to "new, unexpected, value relevant" information.⁵⁵

⁵⁴ "Apache Corporation Announces Temporary Deferral of Alpine High Natural Gas Production in Response to Recent Pricing at Waha Hub," *Globe Newswire*, April 23, 2019, 6:30 am.

⁵⁵ Nye Report, ¶¶56, 60.

Note that Dr. Nye cites to a report I wrote in the *Beckel v. Fagron Holdings USA, LLC* ("Fagron") case to support his arbitrary use of a multi-day event window. See, Nye Reply Report, ¶22.

However, the *Fagron* case was not a securities class action, there was no fraud-on-the-market theory, and there was no claim of market efficiency. Moreover, the individual one-day price reactions were all statistically

36. In addition, Dr. Nye's use of a cumulative four-day statistical test (when not a single day was individually statistically significant) for an event study contradicts his own methods and conclusions. Contrary to his arbitrary use of a cumulative four-day event window for the April 23, 2019 alleged corrective disclosure, in his first report, Dr. Nye used standard one-day statistical tests in his event study of earnings announcements.⁵⁶ Dr. Nye's use of a cumulative four-day window on this day is also in stark contrast to his claim that Apache's stock price "plummeted immediately" after Mr. Keenan's departure was announced on the October 25, 2019 alleged corrective disclosure, but then "rebounded" and "stabilized" in approximately *one hour* to the news that Mr. Keenan's resignation was not related to the Suriname well.⁵⁷ Thus, Dr. Nye appears to completely change the design of his test in order to find a result that supports his client's claims. Basic principles dictate that "peeking at the data" before designing a test is unscientific.⁵⁸

37. The unscientific and results-oriented nature of Dr. Nye's analysis is further demonstrated by the fact that the academic literature he cites specifically for his use of a multi-day window for the April 23, 2019 alleged corrective disclosure does not support his method. The academic literature he cites does not support his claims and argues against market efficiency, is completely theoretical, and/or directly contradicts his own claims.⁵⁹ For instance,

significant, unlike in this case, where *not* a single one-day price reaction is statistically significant. See, Expert Report of Lucy P. Allen in *Fagron*, filed April 5, 2019, ¶¶22-26.

As I explained in my deposition, analyzing a multi-day event window in this case is not appropriate given that there was no statistically significant reaction on the first day the allegedly corrective information was announced. See, Allen Deposition, 122:21-125:11.

⁵⁶ Nye Report, ¶¶54-60 and Exhibit 12.

⁵⁷ Nye Reply Report, ¶37.

⁵⁸ See for example, De Veaux, Richard D., Paul F. Velleman, and David E. Bock, *Stats Data and Models* (Pearson Education, Inc.: Boston, MA, 3rd ed., 2012), p. 491.

⁵⁹ For example:

- Zhang finds that the returns of high-uncertainty stocks (such as Apache according to Dr. Nye) are predictable, which would directly violate Dr. Nye's finding of market efficiency for Apache. (Zhang, X. Frank, "Information Uncertainty and Stock Returns," *The Journal of Finance*, (Vol. 61, 2006), pp. 105–136 at 106.).
- *Dow and Gorton, Kyle, and Grossman and Stiglitz* are completely theoretical works on complex trading patterns between informed and uninformed traders and thus do not support Dr. Nye's empirical claim that Apache's stock price continued responding to the April 23, 2019 alleged corrective disclosure until four days after the information was released. Moreover, *Dow and Gorton* theorize that "[t]he pattern of price response over time may be so complicated that there is no apparent relationship between the arrival of new information and the price," which would call into question the applicability of Dr. Nye's event study methodology for Apache. (Dow, James and Gary Gorton, "Trading, Communication and the

the MacKinlay paper Dr. Nye cites to explicitly states that the reason they would use a two-day event window is because it “captures the price effects of announcements which occur after the stock market closes on the announcement day.”⁶⁰ The rationale for a two-day event window therefore directly contradicts Dr. Nye’s claims since the allegedly corrective information on April 23, 2019 came out *before* the market opened. Moreover, not only is Dr. Nye’s analysis non-standard and inconsistent within his analyses in this case, but it is also not consistent with his analyses in prior reports.⁶¹

38. In addition, courts have found that the use of a cumulative two-day window is inappropriate in situations like this. (Note, in my experience, I am unaware of a situation such as this, where Plaintiffs are applying the “fraud-on-the-market” theory and therefore claiming market efficiency, while also using the type of four-day window proposed here by Dr. Nye). For example, the court in *Exxon* concluded that the use of a cumulative two-day event window was

Response of Asset Prices to News,” *The Economic Journal*, (Vol. 103, Issue 418, 1993), pp. 639–646 at 639. Kyle, Albert S., “Continuous Auctions and Insider Trading,” *Econometrica*, (Vol. 53, No. 6, 1985), pp. 1315–1335. Grossman, Sanford J. and Joseph E. Stiglitz, “On the Impossibility of Informationally Efficient Markets,” *The American Economic Review*, (Vol. 70, Issue 3, 1985), pp. 393–408.).

- *Mitchell and Netter* state that “stock prices react quickly to the release of new information, in many cases the event window will be relatively short, sometimes as short as one trading day,” which directly calls into question Dr. Nye’s use of a cumulative four-day event window. In addition, *Mitchell and Netter* explicitly state that “long event windows may include noise and information from other events, making it difficult to isolate the impact of the relevant event.” This statement implies that Dr. Nye’s use of a cumulative four-day event window following the April 23, 2019 alleged corrective disclosure may erroneously include stock price movements due to events unrelated to the alleged corrective disclosure. (*Mitchell, Mark L. and Jeffry M. Netter, “The Role of Financial Economics in Securities Fraud Cases: Applications at the Securities and Exchange Commission,” The Business Lawyer*, (Vol. 49, 1994), pp. 545–590 at 545 and 558.).
- *Tabak and Dunbar* alert that “a longer event window is more likely to “[pick] up other effects unrelated to the event under consideration,” thus calling into question how Dr. Nye’s results-oriented cumulative four-day event window could isolate Apache’s stock’s price reaction to the April 23, 2019 alleged corrective disclosure. In addition, *Tabak and Dunbar* state that “it is helpful to have some rationale for the length of the event window chosen,” which Dr. Nye clearly does not have. (*Tabak, David I., and Frederick C. Dunbar, “Materiality and Magnitude: Event Studies in the Courtroom,” Litigation Services Handbook: The Role of the Financial Expert* (John Wiley & Sons, Inc.: New York, NY, 3rd ed., 2001), Ch. 19, p. 4.).
- *Berk and DeMarzo* state that “we expect [...] the stock price to react nearly instantaneously” and that “most investors would find that the stock price already reflected the new information before they were able to trade on it,” thus directly contradicting Dr. Nye’s claim that the Apache stock’s price reaction cannot be statistically detected until four days after the April 23, 2019 alleged corrective disclosure. (*Berk, Jonathan and Peter DeMarzo, Corporate Finance* (Pearson Education, Inc.: Boston, MA, 3rd ed. 2014), Ch. 9, p. 296.).

⁶⁰ MacKinlay, A. Craig, “Event Studies in Economics and Finance,” *Journal of Economic Literature*, Vol. 35, 1997, pp. 13–39 at p. 15.

⁶¹ See for example, the expert reports listed in Dr. Nye’s curriculum vitae in his Reply Report.

“unsuitable” since the stock traded in an efficient market and there was no new information released on the second day.⁶² Similarly in this case, Dr. Nye claims that Apache’s stock traded in an efficient market and there was no new information released on the second, third or fourth day.

39. In sum, Dr. Nye’s use of a cumulative four-day event window when *no* individual day is statistically significant is cherry-picked, non-standard, and contradicts his own event study method.

3. If Nye had applied his cumulative four-day approach to his market efficiency analysis, the majority of the “event” days Nye found to be significant would no longer be significant, contradicting his own finding of market efficiency

40. Telling evidence that Dr. Nye’s event study approach for the alleged corrective disclosure on April 23, 2019 is unscientific, non-standard and merely results-oriented is that if he used this approach in his “cause-and-effect relationship” analysis from his initial report, he would get completely different results.

41. In his first report, Dr. Nye performs a “cause-and-effect relationship” test using an event study to analyze whether Apache’s stock traded in an efficient market during the alleged Class Period. Dr. Nye’s cause-and-effect relationship test uses his event study to test Apache’s stock price reactions on “event” dates (*i.e.*, dates on which Apache released quarterly or yearly financial results and/or financial guidance) and “non-event” dates.⁶³ Dr. Nye then uses statistical tests to analyze whether there are differences between the price reactions on “event” dates vs. “non-event” dates.⁶⁴ Dr. Nye uses exclusively one-day event windows and finds that nine out of 14 “event” dates (or 64%) are associated with a statistically significant reaction.⁶⁵ Dr. Nye then finds “there exists a higher probability of observing statistically significant Company-specific

⁶² *Ramirez v. Exxon Mobil Corp.*, Civil Action 3:16-CV-03111-K (N.D. Tex. August 21, 2023), p. 36 (“In this case, a two-day window is unsuitable for measuring price impact in an efficient market”). See also, Memorandum Opinion and Order, *The Erica P. John Fund, Inc. v. Halliburton Company and David J. Lesar* (3:02-CV-1152-M), filed July 25, 2015, pp. 29-30 (“The Court finds that, in this case, the use of a two-day window is inappropriate to measure price impact in an efficient market. An efficient market is said to digest or impound news into the stock price in a matter of minutes; therefore, an alleged corrective disclosure released to the market at the start of Day 1, coupled with an absence of price impact throughout Day 1, followed by a price impact on Day 2, will not show price impact as to the alleged corrective disclosure.”).

⁶³ Nye Report, ¶57.

⁶⁴ Nye Report, ¶58.

⁶⁵ Nye Report, ¶58.

returns (at or above the 95% confidence level) on event dates during the Class Period.”⁶⁶ Based on these findings, Dr. Nye concludes that his “analysis confirms that Apache’s common stock price typically reacted more strongly on event dates than on non-event dates.”⁶⁷

42. However, if one were to apply Dr. Nye’s arbitrary, non-standard cumulative four-day window approach to his market efficiency analysis, more than half of the “event” days Dr. Nye analyzed and found to be significant in his first report would no longer be significant (shown in the table below) and his conclusion “that there exists a higher probability of observing statistically significant Company-specific returns on event dates during the Class Period” would no longer hold.

1-Day v. 4-Day Event Window Price Reactions For Nye's News Dates using Nye's Model										
Nye's News Date	Reaction Date	Earnings Release Period	Alleged Misrep.?	1-Day		4-Day		Still Stat. Sig.? ²		
				t-stat.	Stat. Sig.? ¹	t-stat.	Stat. Sig.? ¹	Yes	No	
1. 11/3/16	11/3/16	3Q16	Yes	-4.47	Yes	-2.00	Yes	Yes	No	
2. 2/23/17	2/23/17	FY16	Yes	-2.78	Yes	-1.22	No	No	No	
3. 5/4/17	5/4/17	1Q17	Yes	0.44	No	1.62	No	-	-	
4. 8/3/17	8/3/17	2Q17	Yes	-3.93	Yes	-2.27	Yes	Yes	Yes	
5. 11/2/17	11/2/17	3Q17	Yes	-0.81	No	1.60	No	-	-	
6. 2/22/18	2/22/18	FY17	Yes	-7.10	Yes	-3.99	Yes	Yes	Yes	
7. 5/2 & 5/3/18	5/3/18	1Q18	Yes	-4.58	Yes	-1.73	No	No	No	
8. 8/1 & 8/2/18	8/2/18	2Q18	Yes	-1.12	No	1.92	No	-	-	
9. 10/31 & 11/1/18	11/1/18	3Q18	No	-4.04	Yes	-1.10	No	No	No	
10. 2/27 & 2/28/19	2/28/19	FY18	Yes	0.23	No	0.01	No	-	-	
11. 5/1 & 5/2/19	5/2/19	1Q19	Yes	-2.51	Yes	-0.82	No	No	No	
12. 7/31 & 8/1/19	8/1/19	2Q19	Yes	2.57	Yes	1.78	No	No	No	
13. 10/30 & 10/31/19	10/31/19	3Q19	No	0.60	No	0.97	No	-	-	
14. 2/26 & 2/27/20	2/27/20	FY19	No	3.51	Yes	1.00	No	No	No	
				No. Stat. Sig. Days:		9	3		21%	
				% of Stat. Sig. Days:		64%				

Notes and Sources:
Data from the Nye Report and Dr. Nye's Turnover.

¹ Significance for 1-day is based on the price reaction's t-statistic, calculated as the price reaction divided by the standard error of the regression over the sample period. Significance for 4-day is based on Dr. Nye's methodology. "Yes" indicates that the price reaction is statistically significant at the 5% level.

² "Yes" indicates that both the 1-day and 4-day price reactions are statistically significant at 5% level. "No" indicates that the 1-day price reaction is statistically significant at 5% level but the 4-day price reaction is not.

⁶⁶ Nye Report, footnote 114.

⁶⁷ Nye Report, ¶58.

43. Applying the unorthodox event study method that Dr. Nye is now using for the April 23, 2019 alleged corrective disclosure, he would find, contrary to his conclusions in his initial report, that six “event” dates are actually *not* statistically significant (February 23, 2017, May 3, 2018, November 1, 2018, May 2, 2019, August 1, 2019 and February 27, 2020).⁶⁸ Thus, Dr. Nye would find that only three of his 14 “event” days (or 21%) had statistically significant price reactions. Moreover, using Dr. Nye’s own test from his initial report to analyze whether there are differences between the price reactions on “event” dates vs. “non-event” dates,” Dr. Nye would find there is no statistically significant difference (*i.e.*, there would *not* exist “a higher probability of observing statistically significant Company-specific returns on event dates during the Class Period”). Thus, using Dr. Nye’s own test (calculate statistical significance using a cumulative four-day window) that he now puts forward in the Nye Reply Report, he would have to conclude that Apache’s stock price reacted similarly on “non-event” dates as on “event” dates, and that the stock fails his own test of market efficiency.⁶⁹

44. Moreover, using a cumulative four-day event window further contradicts Dr. Nye’s findings from his initial report. In particular, in his initial report, Dr. Nye outlines the specific reasons why the results of his event study (*i.e.*, either a statistically significant reaction or not) are consistent with the news that was announced on each of his “event” days. However, since the vast majority of his “event” dates that he previously found to be statically significant would no longer be significant using a cumulative four-day window, his analysis of the reasons the stock moved would no longer make sense. For example, on February 23, 2017 (row 2 in the table above), according to Dr. Nye’s first report there was a statistically significant decline in Apache’s stock price. Applying Dr. Nye’s methodology under a two-, three-, or four-day event window, the cumulative stock price decline on that day is no longer statistically significant.⁷⁰ However, Dr. Nye claims that “the statistically significant decline on February 23, 2017 is consistent with that expected in an efficient market,” which would completely contradict the

⁶⁸ Note that four of these dates are alleged misrepresentation dates.

⁶⁹ In particular, using Dr. Nye’s own test, a “two-sample z-test,” the proportion of “event” dates that are statistically significant is not statistically different from the proportion of “non-event” dates that are statistically significant.

⁷⁰ Significance for two-day, three-day and four-day is based on Dr. Nye’s methodology using data from Dr. Nye’s Turnover.

finding according to his new methodology using a longer event window.⁷¹ Specifically, Dr. Nye states that:

Given that (i) Apache’s earnings and EBITDA were lower than expectations due to lower liquids volumes and price realizations than expected”; and (ii) the Company provided a “much weaker than anticipated outlook for 2017 volumes and cash flows,” the statistically significant Company-specific stock price decline on February 23, 2017 is consistent with that expected in an efficient market.” [Nye Report, Exhibit 12]

45. In sum, telling evidence that Dr. Nye’s event study approach for the alleged corrective disclosure on April 23, 2019 is unscientific, non-standard, and merely results-oriented is that if he used this approach in his “cause-and-effect relationship” analysis from his initial report, he would get completely different results, including Apache’s stock failing his own test of market efficiency.

4. The Nye Reply Report’s claims regarding analyst commentary following the April 23, 2019 alleged corrective disclosure are misleading and incorrect – analysts consistently characterized the deferral as “expected” and “prudent” given the deteriorating commodity prices

46. Dr. Nye’s claims regarding analyst commentary following the April 23, 2019 alleged corrective disclosure are misleading and incorrect. Analysts consistently characterized the deferral as “expected” and “prudent” given the deteriorating commodity prices.

47. Dr. Nye claims that three analysts lowered their production estimates for Alpine High after the alleged corrective disclosure.⁷² However, two of the analysts (Capital One and Barclays) termed the reduction as having “minimal” impact and the other analyst (Cowen) issued an industry report, which was updating estimates for many other E&P companies and linked the Alpine High “shut-ins” to the low Waha pricing.⁷³ Further, the analyst commentary indicates that the change in production estimates was “expected” and thus in an efficient market already impounded into the stock price. Contrary to Dr. Nye’s claims, no analysts, including the three

⁷¹ Nye Report, Exhibit 12. Note a review of news articles on Factiva about Apache yielded no positive confounding news on the following three days.

⁷² Nye Reply Report, ¶25.

⁷³ Cowen analyst report, dated April 26, 2019 and Nye Reply Report, ¶25.

Dr. Nye claims lowered their production estimates, lowered their price targets of Apache after the alleged corrective disclosure.⁷⁴

48. Dr. Nye claims that analysts characterized the deferral as a “negative” event.⁷⁵ However, negative does not mean unexpected, and consistent with the lack of a statistically significant decline on this date, analysts either stated the deferral was “prudent” and “expected” due to the dramatic decline in Waha prices (which were close to zero at this point in time) or linked it to the decline in Waha prices. For example, Dr. Nye cites to a Macquarie analyst report to support his claim. However, the Macquarie analysts described the announcement as “not much of a negative, in our view,” and that given the “severity of local Permian natural gas pricing weakness, we think the deferral of gas is prudent and likely expected by investors”:

Given the severity of local Permian natural gas pricing weakness, we think the deferral of gas is **prudent** and likely **expected** by investors. [...] However, the announcement itself is **not that much of a negative**, in our view. [Macquarie, 4/23/19, emphasis added]

49. Analysts at Scotiabank and Stephens stated that the deferral of Alpine High production was due to the “extremely low” current Waha Hub natural gas price and was not a surprise to the market:

APA announced that **due to extremely low prices at Waha Hub**, it has initiated natural gas volume deferrals at Alpine High. [...] While optically we view the release as a negative, **we do not think it is a surprise to the market** that depressed Waha pricing is hampering Alpine cash generative capabilities. [Stephens, 4/23/19, emphasis added]

Not unexpectedly, Apache has decided to defer certain natural gas production out of its gas-heavy Alpine High position in the Permian Basin **due to extremely low WAHA hub pricing**. [Scotiabank, 4/23/19, emphasis added]

50. Hence, Dr. Nye’s claim that this alleged corrective disclosure changed the market’s view of Alpine High economics in a “low-price environment” is baseless as the market was already aware and expected the deferral due to the extremely low-price environment.⁷⁶

⁷⁴ Based on FactSet Research Systems, Inc. and available analyst reports from Refinitiv Eikon and the Company.

⁷⁵ Nye Reply Report, ¶26.

⁷⁶ Nye Reply Report, ¶33.

51. In addition, Dr. Nye incorrectly claims that the Allen Report’s analyses seek to “rebut Plaintiffs’ allegations regarding ‘loss causation.’”⁷⁷ The reason for the deferral is irrelevant as the Allen Report has already shown that there was no statistically significant price reaction to the announcement of the deferral according to both Dr. Nye’s event study and the alternative event study, consistent with analyst commentary that the deferral was “expected.”⁷⁸

52. Moreover, as discussed in the Allen Report, not a single analyst attributed the deferral to any new information about Alpine High’s quantity or mix of oil and wet gas vs. dry gas.⁷⁹ Instead, analysts described Alpine High’s production deferral as a “shut-in,” which is defined as “available oil or gas which is not being produced from an existing well.”⁸⁰ In other words, according to analysts, there was available oil or gas at Alpine High but it was not being produced. Analysts noted that the shut-ins at Alpine High were due to the weak commodity price outlook.

To date, we’ve already seen **Waha regional gas pricing** (\$1.428/Mcf in 1Q19, - \$0.29 in 2Q19) **compel shut-ins at Alpine High** for APA, and we suspect that a combination of weak pricing and physical constraints should create some near-term noise until pipelines come online in 3Q. [Cowen, 4/26/19, emphasis added]

On Tuesday (4/23/19) APA announced that it initiated **natural gas production volume deferrals (shut-ins) in the Alpine High operating area** starting in late March **due to ‘extremely low prices at Waha Hub’** in the Permian Basin.

Management will monitor daily natural gas prices and will return shut-in gas to sales when it is profitable [Barclays, 4/28/19, emphasis added]

53. Further, as discussed above, Dr. Nye ignores that none of the analysts changed their understanding of Alpine High’s reserves or mix of oil and wet gas vs. dry gas. For example, Credit Suisse analysts estimated Alpine High’s “unbooked reserves” of wet gas, dry gas, and oil throughout the Focus Period.⁸¹ Credit Suisse analysts did not update their estimates of Alpine High’s “unbooked reserves” in the week following the April 23, 2019 alleged corrective disclosure. When they updated their estimates on May 2, 2019, there was essentially no change

⁷⁷ Nye Reply Report, ¶32.

⁷⁸ Allen Report, ¶¶47-62.

⁷⁹ Allen Report, ¶¶59-62.

⁸⁰ “Shut-in,” *Merriam Webster*, accessed at: <https://www.merriam-webster.com/dictionary/shut-in>.

⁸¹ “Unbooked reserves” reflect the quantity of reserves in a play that are possible and probable, but not proven. See Allen Report, footnote 112.

in the estimated quantity or mix of Alpine High's "unbooked reserves" of wet gas, dry gas, and oil.⁸²

D. For the October 25, 2019 alleged corrective disclosure, the Nye Reply Report fails to show *any* evidence of price impact from the alleged misrepresentations - failing to identify any new news about Alpine High, ignoring that the market commentary is essentially unanimous in directly attributing the stock price decline to Suriname speculation while not a single analyst attributes the stock price decline to new news about Alpine High

54. The Nye Reply Report claims that the Allen Report failed to demonstrate a lack of price impact associated with the October 25, 2019 alleged corrective disclosure. Dr. Nye offers the following six justifications for his conclusion:

- i. the news of Mr. Keenan's departure caused a statistically significant price decline,
- ii. the Allen Report did not identify "any other factor that may have contributed to the stock price decline that day,"
- iii. the Company did not provide a reason for Mr. Keenan's departure but "explicitly stated that it was 'not connected to Suriname,'"
- iv. Mr. Keenan was considered the "Godfather" of Alpine High,
- v. "all analysts that issued reports following the disclosure, as well as news commentators, cited the disappointing performance of Alpine High," and
- vi. "any assumptions regarding the reason(s) for Mr. Keenan's departure are premature given that fact discovery is ongoing."⁸³

However, all of Dr. Nye's reasons are incorrect and/or misleading, and Dr. Nye fails to show *any* evidence of price impact from the alleged misrepresentations. Dr. Nye fails to identify any new news about Alpine High that was released on this date and ignores that the market commentary is

⁸² Allen Report, ¶61.

⁸³ Nye Reply Report, ¶43.

essentially unanimous in *directly* attributing the stock price decline to Suriname speculation and that not a single analyst attributes the stock price decline to any new news about Alpine High.

55. Regarding Dr. Nye's first and second reasons (Mr. Keenan's departure caused a statistically significant price decline and the Allen Report did not identify "any other factor that may have contributed to the stock price decline that day"), the Allen Report showed that the market commentary is essentially unanimous in *directly* attributing the stock price decline on October 25, 2019 to concerns about Apache's Suriname wells and not to any new news about Alpine High.⁸⁴ All analyst reports and news stories that commented on Apache's stock price decline on October 25, 2019 attributed the price decline to Suriname, not to any new news about Alpine High.⁸⁵ The market commentary was unanimous in indicating that Mr. Keenan's departure came at a critical time in the exploration of Apache's highly anticipated Suriname well, and thus created investor concern about Apache's prospects in Suriname. The three analysts that issued reports on October 25, 2019 *directly* attributed Apache's stock price decline on that day to the market's concerns about Apache's Suriname well and not to any new news about Alpine High. As detailed in the Allen Report, RBC, Truist Securities, and Credit Suisse issued reports on October 25, 2019:

We think APA share weakness is a reaction to investor concern that the resignation is related to the outcome of APA's Maka-1 exploration well in Suriname. [RBC Capital Markets, 10/25/19, emphasis added]

Apache's stock underperformed this morning (down ~5.5% vs. XOP up ~1%) on investor speculation that a SVP's resignation (See Link) is linked to an upcoming unsuccessful Suriname Maka-1 exploration well in Block 58. [Truist Securities, 10/25/19, emphasis added]

More recently, APA has ventured into Suriname where it is currently drilling one of the most highly-anticipated exploration wells of the year [...] Timing of resignation is concerning. While Mr. Keenan's exact role in Suriname is not clear (APA claims the resignation is not connected to the exploration prospect), **APA is underperforming peers by >5% today given the timing of the departure of the head of Worldwide Exploration when the company is on the 31st day of drilling the Suriname well, i.e. is now within the expected 30-60 day spud-to-TD window. Today's sell-off nonetheless highlights the high expectations for the**

⁸⁴ Allen Report, ¶¶65-74.

⁸⁵ Note Dr. Nye cites to a *Seeking Alpha* article published on February 28, 2020 that states Apache's stock price on October 25, 2019 "dropped in part because Keenan was the Godfather of Alpine High." However, it was not new news that Mr. Keenan was the "Godfather of Alpine High" and in an efficient market, information that is not new cannot impact the stock price. Nye Reply Report, ¶40.

well already baked into APA's stock price[.] [Credit Suisse, 10/25/19, emphasis original and added]

Thus, the Allen Report clearly identified the factor that according to analysts caused the statistically significant decline on October 25, 2019 – market concern about Apache's highly anticipated Suriname well, which was at a critical time in its exploration.

56. Regarding Dr. Nye's third reason (the Company did not provide a reason for Mr. Keenan's departure but "explicitly stated that it was 'not connected to Suriname'"), market and analyst commentary *after* October 25, 2019 similarly attributed the overall price decline on October 25 to concerns about Apache's Suriname well.⁸⁶ In fact, on October 31, 2019, Credit Suisse analysts explicitly noted that even though Mr. Keenan's departure was "supposedly unrelated to Suriname," given that expectations for Apache's Suriname well were "exceedingly high" and the announcement came in the middle of drilling the well, "the timing nonetheless spooked investors."⁸⁷ A *Wall Street Journal* article published months later in December 2019 characterized Apache's Suriname well as "among the most anticipated wells in the world" and similarly explained that the drop in Apache's stock on October 25, 2019 was "prompt[ed] [by] concern about Suriname."⁸⁸ Thus, Dr. Nye's claim that the decline in Apache's stock on October 25, 2019 is due to Alpine High since Apache "explicitly stated that [Mr. Keenan's departure] was 'not connected to Suriname'" is completely unsupported and contrary to market commentary indicating that the Company's statement that Mr. Keenan's departure was not related to Suriname did not fully alleviate market concern about the Suriname well.

57. Regarding Dr. Nye's fourth and fifth reasons (Mr. Keenan was considered the "Godfather" of Alpine High and "all analysts that issued reports following the disclosure, as well as news commentators, cited the disappointing performance of Alpine High"), Dr. Nye flatly

⁸⁶ See, for example RBC analyst report on October 30, 2019, ("Recent APA share weakness reflected concern on the Suriname program following a management departure.") and "Apache Shares Plunge Following Scant Update on South American Oil Prospect," *Wall Street Journal*, December 2, 2019. ("In late October, Apache shares fell 5% in a day after it was reported that the company's senior vice president of world-wide exploration, Steve Keenan, has resigned, prompting concern about Suriname.").

⁸⁷ Credit Suisse analyst report, October 31, 2019, ("Expectations for the well are exceedingly high, underscored by the sharp selloff in the stock last Friday after news broke that APA's head of Worldwide Exploration had departed the company – supposedly unrelated to Suriname, though with APA in the middle of drilling the well the timing nonetheless spooked investors.").

⁸⁸ "Apache Shares Plunge Following Scant Update on South American Oil Prospect," *Wall Street Journal*, December 2, 2019.

ignores that there was no new news about Alpine High announced on this date and news of Alpine High's disappointing performance was revealed *before* the Focus Period, so was not new at the time of Mr. Keenan's departure. The fact that Mr. Keenan was considered the "Godfather" of Alpine High was not new news. Instead, analysts and market commentators referred to Mr. Keenan as the "head of Worldwide Exploration," which is consistent with Mr. Keenan's departure sparking concern about the Suriname well, which was "highly anticipated" and in the middle of being drilled.⁸⁹ Moreover, as discussed in the Allen Report, when discussing Alpine High following the October 25 announcement, analysts and the media only *repeated* known facts about Alpine High, including the effect that weak commodity prices had on Alpine High's production, and there was no indication that there was any news regarding Alpine High's reserves or the mix of oil and wet gas vs. dry gas.⁹⁰ For example, analysts at RBC Capital Markets noted that Mr. Keenan was part of the team that discovered Alpine High and that Alpine High's results had not met expectations due to weak natural gas and NGL prices, all of which was known before October 25.⁹¹ Dr. Nye *cannot and has not cited to a single analyst* attributing the price decline on this date to any new news about Alpine High. Nor has Dr. Nye cited any new news about Alpine High that was released on this date.

58. Regarding Dr. Nye's sixth reason ("any assumptions regarding the reason(s) for Mr. Keenan's departure are premature given that fact discovery is ongoing"), the reason for Mr. Keenan's departure is irrelevant since there was no new news about Alpine High released on this date, the market commentary is essentially unanimous in *directly* attributing the stock price decline to Suriname speculation, and not a single analyst attributes the stock price decline to new news about Alpine High.

⁸⁹ Credit Suisse analyst report, dated October 31, 2019, Credit Suisse analyst report, dated October 25, 2019 and Morgan Stanley analyst report, dated October 30, 2019.

⁹⁰ See for example, Allen Report, ¶¶72-73.

⁹¹ RBC Capital Markets analyst report, dated October 25, 2019, ("Mr. Keenan was a major part of the team that discovered the Alpine High play that has been a significant investment for APA. However, we think the outcome of results from Alpine High have not met high expectations and due to weakening natural gas and NGL prices, we expect that APA could allocate activity away from Alpine high in favor of oilier targets in other parts of the Permian."). The effect of weak commodity prices on Alpine High was already known – as an example, on October 7, 2019, analysts at Cowen commented that "given particularly weak NGL pricing and gas pricing, it's likely that APA looks to redeploy capital away from Alpine High[.]" Cowen analyst report, dated October 7, 2019.

E. For the March 16, 2020 alleged corrective disclosure, the Nye Reply Report fails to show *any* evidence of price impact from the alleged misrepresentations - the Nye Reply Report fails to identify any new information in the allegedly corrective *Seeking Alpha* article, creates confusion by now claiming an entirely different alleged corrective disclosure (a Susquehanna report) that does not even mention Alpine High, and although unnecessary to do an event study if there is no corrective event, incorrectly adjusts the event study statistics for the record-high volatility on this date

59. The Nye Reply Report claims that the Allen Report “fails to demonstrate a lack of price impact” associated with the March 16, 2020 alleged corrective disclosure. Dr. Nye offers the following five justifications for his conclusion:

- i. the Allen Report did not consider the “full set of information released on March 16, 2020 that Plaintiffs allege was corrective (*i.e.*, the Susquehanna report),”
- ii. the Allen Report “fails to put forth an event study model that, in her opinion, is ‘applicable,’”
- iii. “applying ‘[t]he simplest way to resolve the issues associated with performing an event study over a period of heightened volatility’” yields a statistically significant price decline after the March 16, 2020 alleged corrective disclosure,
- iv. the Allen Report “has not identified any other information disclosed on March 16, 2020 that could explain” the statistically significant declines” after the March 16, 2020 alleged corrective disclosure, and
- v. the Allen Report “provides no reliable basis or authority to discredit Seeking Alpha as a source of value-relevant information to investors.”⁹²

However, all of Dr. Nye’s reasons are incorrect and/or misleading and Dr. Nye fails to show *any* evidence of price impact from the alleged misrepresentations. Dr. Nye fails to identify any new information in the allegedly corrective *Seeking Alpha* article, creates confusion by now claiming

⁹² Nye Reply Report, ¶52.

an entirely different alleged corrective disclosure (a Susquehanna analyst report that does not even mention Alpine High), and although unnecessary to do an event study if there is no corrective event, incorrectly adjusts the event study statistics for the record-high volatility on this date.

- 1. The Nye Reply Report fails to identify any new information in the allegedly corrective *Seeking Alpha* article and creates confusion and obfuscation by now claiming an entirely different alleged corrective disclosure in a Susquehanna analyst report that does *not* even mention Alpine High**

60. Dr. Nye claims that the Allen Report did not consider the “full set of information released on March 16, 2020 that Plaintiffs allege was corrective (*i.e.*, the Susquehanna report).” However, Dr. Nye is wrong on both counts – the Complaint does not allege the Susquehanna report as corrective and the Allen Report did consider it in its analyses. The Complaint has an entire section devoted to two of the Focus Period alleged corrective disclosures entitled the “Truth Emerges.”⁹³ The Susquehanna report is not mentioned once in this section of the Complaint. The Allen Report *did* consider the Susquehanna analyst report in its analyses (see for example, Allen Report, ¶¶76-79), and I explained this in my deposition.⁹⁴

61. The Allen Report demonstrated that the March 16, 2020 *Seeking Alpha* article that Plaintiffs claim as an alleged corrective disclosure in their Complaint had no price impact.⁹⁵ In particular, the Allen Report showed that the *Seeking Alpha* article did not have any new news about Apache, let alone Alpine High, and that no analyst or news story mentioned the article, let alone tied it to any price drop.⁹⁶ Given that the *Seeking Alpha* article had no new corrective

⁹³ Complaint, Section V.

⁹⁴ Allen Deposition, 187:16-18.

⁹⁵ See for example, Allen Report, ¶¶75-96.

⁹⁶ The lack of analyst reports and news stories mentioning the Seeking Alpha article after this date is consistent with the lack of price impact and demonstrates that the Seeking Alpha article was not important to the market’s valuation of Apache. This is consistent with recent court decisions that have found that a lack of analyst commentary after an event, can suggest that the market did not “consider it to be significant” and thus provide evidence of no price impact. See, for example, *Ramirez v. Exxon Mobil Corp.*, Civil Action 3:16-CV-03111-K (N.D. Tex. August 21, 2023), p. 40. See also, *Arkansas Teacher Retirement System v. Goldman Sachs Group, Inc.*, No. 22-484, 2023 WL 5112157 (2d Cir. August 10, 2023), pp. 68-69.

information, in an efficient market it is not evidence of price impact.⁹⁷ Moreover, contrary to Plaintiffs' theory that Alpine High was "too heavy on unprofitable 'dry' gas," the *Seeking Alpha* article described Alpine High as "wet-gas rich."⁹⁸ Dr. Nye has no evidence refuting the Allen Report's analyses regarding *Seeking Alpha*.

62. Instead, Dr. Nye disingenuously now claims the Susquehanna analyst report issued on March 16, 2020, which downgraded Apache (along with other E&P companies), is the alleged corrective disclosure.⁹⁹ The Complaint, in its "Truth Emerges" section, which focuses on the last two alleged corrective disclosures in the Focus Period, states that the "full extent of Defendants' fraud was revealed on March 16, 2020, when *Seeking Alpha* published an article pre-market describing how Alpine High had left Apache hobbled and particularly challenged amongst its E&P peers."¹⁰⁰ The Complaint *does not* mention the Susquehanna report in describing the alleged revelation of the "full extent of Defendant's fraud" or in this section at all. The only mention of the Susquehanna report in Plaintiffs' 141-page Complaint is in a different section where it devotes an entire paragraph to the *Seeking Alpha* article, claiming that it "revealed" that "Apache was particularly challenged amongst its E&P peers," and then just notes "Susquehanna Financial Group downgraded Apache shares, highlighting a lack of 'balance sheet flexibility' and noting Apache's 'net leverage exceeding 3.0x by the end of 2021.'"¹⁰¹ Moreover, the Complaint specifically characterizes March 16, 2020 as "**the** March 16, 2020 partial corrective disclosure," implying that there was a singular allegedly corrective event, *i.e.*, the *Seeking Alpha* article, on this date.¹⁰²

63. Tellingly, the Complaint claims that the March 16, 2020 alleged corrective disclosure revealed Apache's "severely constrained financial position relative to its competitors." However, the Susquehanna report did not make such a revelation. In particular, Dr. Nye fails to mention the Susquehanna report is not just about Apache, but an industry report discussing

⁹⁷ Note this principle is echoed in the court decision in *Exxon* that found that an analyst report that did not "offer any new corrective information to the market" was not evidence of price impact. *Ramirez v. Exxon Mobil Corp.*, Civil Action 3:16-CV-03111-K (N.D. Tex. August 21, 2023), p. 51.

⁹⁸ "The Oil Price Crash Puts Apache Corporation In A Tough Spot," *Seeking Alpha*, March 16, 2020.

⁹⁹ Nye Reply Report, ¶¶45, 47.

¹⁰⁰ Complaint, ¶111.

¹⁰¹ Complaint, ¶315.

¹⁰² Complaint, ¶316, emphasis added.

several companies in the E&P industry, including Apache, and that the report does not just downgrade Apache, but also downgrades two other E&P companies, Noble Energy, Inc. and Occidental Petroleum Corporation.¹⁰³ Moreover, the reason for the downgrade of all three companies is *exactly the same* – the “large uncertainty in the magnitude and timing of a recovery in oil prices.”¹⁰⁴

With a large uncertainty in the magnitude and timing of a recovery in oil prices, balance sheet flexibility is a main parameter in our stock selection process with factors such as inventory depth, capital intensity, and valuation still playing an important role in the calculus. Based on this parameter, we are downgrading APA, NBL and OXY to Neutral from Positive. These are three previously Positive-rated names where we now see net leverage exceeding 3.0x by the end of 2021 (see Exhibit 1). [Susquehanna, 3/16/20]

Thus, the Susquehanna Report, which is an industry report covering several E&P companies, downgraded Apache, along with other E&P companies, due to the uncertainty in oil prices in the wake of the COVID-19 pandemic and did not reveal Apache’s “severely constrained financial position relative to its competitors.”

64. Moreover, the Susquehanna report does *not* have any new news about Alpine High and tellingly does not even *mention* Alpine High. The focus of the report is the “large uncertainty in the magnitude and timing of a recovery in oil prices” in the wake of the Covid pandemic.¹⁰⁵ Thus, the Susquehanna report, which does not have information about Alpine High, let alone any new or corrective information, cannot be evidence of price impact of the alleged misrepresentations regarding Alpine High. In other words, in an efficient market, given that the Susquehanna report had no new corrective information, it is not evidence of price impact. (This is consistent with the recent court decision in *Exxon* that found that an analyst report that did not “offer any new corrective information to the market” was not evidence of price impact.¹⁰⁶)

65. Dr. Nye claims the Allen Report ignores the Susquehanna analyst report – this is *flatly untrue*.¹⁰⁷ The Allen Report did consider the Susquehanna analyst report in its analyses,

¹⁰³ Susquehanna analyst report, dated March 16, 2020, (“With the lower price assumptions, we are moving to a neutral rating on APA, NBL and OXY.”).

¹⁰⁴ Susquehanna analyst report, dated March 16, 2020.

¹⁰⁵ Susquehanna analyst report, dated March 16, 2020.

¹⁰⁶ *Ramirez v. Exxon Mobil Corp.*, Civil Action 3:16-CV-03111-K (N.D. Tex. August 21, 2023), p. 51.

¹⁰⁷ Nye Reply Report, ¶47.

and I made that clear in my deposition (which Dr. Nye considered and cited in the Nye Reply Report).¹⁰⁸ For example, in my report and deposition I noted:

No analyst or news story discussed or even mentioned the *Seeking Alpha* article following the March 16 alleged corrective disclosure, let alone tied it to any price drop in Apache's stock price. [Allen Report, ¶77]

When I say there's not one analyst that mentions Seeking Alpha and that there's no information, I am referencing that [Susquehanna report]. [Allen Deposition, 187:16-18]

66. Dr. Nye claims the Allen Report "has not identified any other information disclosed on March 16, 2020 that could explain" the statistically significant price decline, and "provides no reliable basis or authority to discredit *Seeking Alpha* as a source of value-relevant information to investors."¹⁰⁹ Dr. Nye is mistaken. It is Dr. Nye himself who has failed to identify any new information about Alpine High on March 16, 2020, and has thus provided *zero* evidence that the price decline (if any) on March 16, 2020 was due to the market learning any new information about Alpine High.¹¹⁰ The Allen Report demonstrated that there was no new information about Alpine High disclosed on this day (let alone any allegedly corrective information) and thus that there was no need for an event study on this date. Nevertheless, the Allen Report showed that what appeared to be a significant price decline after the March 16, 2020 alleged corrective disclosure was consistent with the increased market volatility at the beginning of the COVID-19 pandemic. As explained in the Allen Report, and unrefuted by Dr. Nye, the market volatility, as measured by the VIX (a commonly used measure of the stock market's expectation of volatility based on S&P 500 index options),¹¹¹ reached an all-time high on March 16, 2020.¹¹² Moreover, Dr. Nye's claim that *Seeking Alpha* is a "source of value-

¹⁰⁸ See for example, Allen Deposition, 187:16-18 and Allen Report, ¶77.

¹⁰⁹ Nye Reply Report, ¶¶51-52.

¹¹⁰ Nye Reply Report, Section VIII.

¹¹¹ "Cboe VIX Index," *Cboe*, accessed at: https://www.cboe.com/tradable_products/vix/.

¹¹² See for example, "How does this bear market compare," *USA Today*, March 18, 2020, ("In recent days the VIX has climbed to levels not even seen during the financial crisis in October 2008, signaling the continued uncertainty brought on by the coronavirus pandemic.") and "Traders Bet on Falling 'Fear Gauge,'" *Dow Jones Institutional News*, March 17, 2020, ("The Cboe Volatility Index, or VIX, closed at its highest level in history Monday when U.S. shares recorded the steepest decline since the Black Monday stock-market crash of 1987 [...] The VIX climbed to 82.69 Monday, topping its high of about 80 in 2008.").

See also, Allen Report, ¶¶88-95.

relevant information” is irrelevant since, as shown in the Allen Report, the *Seeking Alpha* article had no new news about Apache or Alpine High.

67. In addition, Dr. Nye completely ignores the Allen Report’s analysis showing that the market was already aware and had analyzed Apache’s debt before both the *Seeking Alpha* article and the Susquehanna analyst report were issued.¹¹³ Dr. Nye claims that “consistent with the *Seeking Alpha* article,” the Susquehanna analyst report estimated that Apache’s “Net Debt/EBITDA” ratio for 2020 and 2021 would be “the highest among the ‘International/Diversified E&Ps,’” and Plaintiffs claim that the *Seeking Alpha* article revealed that Apache did not have a “strong balance sheet” with “high levels of debt” of over \$8 billion in 2019, and a “lofty debt-to-equity ratio of almost 250% - the highest among all large-cap independent oil producers.”¹¹⁴ However, the details mentioned by Plaintiffs about Apache’s debt and equity were not new but released to the market as part of Apache’s 4Q19 and FY2019 financial results on February 26, 2020.¹¹⁵ (Note there was a statistically significant *increase* in Apache’s stock price after this announcement both according to Dr. Nye’s event study model and the alternative event study model.) Many analysts had examined and discussed Apache’s and other E&P companies’ debt before the *Seeking Alpha* article and Susquehanna analyst report were published. See, for example, a Cowen analyst report on the E&P industry on March 11, 2020 that listed the debt amount and maturity terms of Apache and other E&P companies¹¹⁶ or a JP Morgan analyst report on March 2, 2020 that explicitly listed its calculation of Apache’s debt-to-equity ratio as of 2019.¹¹⁷

68. Contrary to Plaintiffs’ and Dr. Nye’s claim that there was any corrective information released regarding the alleged misrepresentations on this day, both the *Seeking Alpha* article and the Susquehanna report stated that the primary reason for Apache’s financial

¹¹³ Allen Report, ¶¶75-87.

¹¹⁴ Complaint, ¶315 and Nye Reply Report, ¶45.

¹¹⁵ “Apache Corporation Announces Fourth-Quarter and Full-Year 2019 Financial and Operational Results,” *Apache Press Release*, February 26, 2020.

¹¹⁶ Cowen analyst report on E&P industry, dated March 11, 2020. See also, Scotiabank analyst report on Apache, dated February 28, 2020.

¹¹⁷ JP Morgan analyst report on Apache, dated March 2, 2020.

stress was plummeting commodity prices caused by the Covid pandemic.¹¹⁸ The title of the *Seeking Alpha* article “The Oil Crash Puts Apache Corporation In A Tough Spot” highlights that the article is about the collapse in oil prices rather than any new information about Alpine High.¹¹⁹ Similarly, the Susquehanna analyst report noted in its “Highlights” that “we are lowering price targets across the coverage universe,” because of oil prices, “which are now based on a \$40/bbl WTI assumption in 2021.”¹²⁰

2. Although unnecessary to do an event study, the Nye Reply Report incorrectly adjusts for the record-high market volatility on this date; if Dr. Nye had properly followed the methodology in the paper he relies upon, he would find that there is no statistically significant reaction to the March 16, 2020 alleged corrective disclosure

69. Dr. Nye claims that the Allen Report “fails to put forth an event study model that, in her opinion, is ‘applicable’” to the March 16, 2020 date and “applying ‘[t]he simplest way to resolve the issues associated with performing an event study over a period of heightened volatility’” yields a statistically significant decline after the March 16, 2020 alleged corrective disclosure.¹²¹ Dr. Nye is incorrect. The Allen Report showed that given that the March 16, 2020 alleged corrective disclosure revealed no new information about Alpine High, an event study would not be necessary and therefore an adjustment to the event study model to account for increased market volatility would also not be necessary.¹²² Moreover, Dr. Nye’s “simple way to resolve the issues” associated with the record-high market volatility on March 16 is incorrect.¹²³ Dr. Nye’s “simple” adjustment is clearly not fully accounting for the record-high market volatility on this day and demonstrates that a full adjustment would yield no statistically significant price reaction. Further, applying any of the three other methods outlined in the paper Dr. Nye relies upon similarly yields that there is no statistically significant price reaction after the March 16, 2020 alleged corrective disclosure.

¹¹⁸ “The Oil Price Crash Puts Apache Corporation In A Tough Spot,” *Seeking Alpha*, March 16, 2020 and Susquehanna analyst report, dated March 16, 2020.

¹¹⁹ “The Oil Price Crash Puts Apache Corporation In A Tough Spot,” *Seeking Alpha*, March 16, 2020 and Susquehanna analyst report, dated March 16, 2020.

¹²⁰ Susquehanna analyst report, dated March 16, 2020.

¹²¹ Nye Reply Report, ¶¶48, 52.

¹²² Allen Report, ¶¶88-95.

¹²³ Nye Reply Report, ¶48.

70. Dr. Nye attempts to show that the stock price decline on March 16 could not be explained by the record-high market volatility by incorrectly applying one of the methodologies described in a paper by former NERA colleagues regarding event studies in periods of high volatility (“NERA paper”). In particular, Dr. Nye claims to apply one method from the NERA paper that proposes “several ways to increase the accuracy of an event study in periods of increased market volatility.”¹²⁴ However, Dr. Nye chooses to only use one of the four methods proposed in the paper and his application of this one method is incorrect.

71. The Allen Report showed that in the days around the March 16, 2020 alleged corrective disclosure the market volatility increased substantially in response to the beginning of the COVID-19 pandemic.¹²⁵ In fact, as shown in the Allen Report, on March 16, 2020 the market volatility, as measured by the VIX, reached an *all-time high*.¹²⁶ Dr. Nye does not dispute this fact. As discussed in the Allen Report, although an event study is not necessary on this date, if one were to do an event study on this date, one would have to adjust for the heightened volatility. This is because a test of the statistical significance of a price reaction is based on the range of normal expected daily variation in stock prices. When testing the statistical significance of the price reaction on a certain date, both Dr. Nye’s event study model (from his initial report) and the alternative event study model use an estimation period of a year before this date, thereby using the stock price volatility in the year before this date to estimate the range of normal expected daily variation in Apache’s stock on this date. However, due to the heightened market volatility, price movements of Apache’s stock around March 16, 2020 were substantially different from what would be expected given the company’s stock price movements in the prior year, when market volatility was much lower. By not accounting for increased market volatility,

¹²⁴ Jovanovic, Branko, and Edward Fox, *NERA Economic Consulting*, “Testing for Materiality in Volatile Market,” January 12, 2010.

¹²⁵ Allen Report, ¶¶88-93.

¹²⁶ “How does this bear market compare,” *USA Today*, March 18, 2020, (“In recent days the VIX has climbed to levels not even seen during the financial crisis in October 2008, signaling the continued uncertainty brought on by the coronavirus pandemic.”) and “Traders Bet on Falling ‘Fear Gauge’,” *Dow Jones Institutional News*, March 17, 2020, (“The Cboe Volatility Index, or VIX, closed at its highest level in history Monday when U.S. shares recorded the steepest decline since the Black Monday stock-market crash of 1987 [...] The VIX climbed to 82.69 Monday, topping its high of about 80 in 2008.”)

In addition, on March 16, 2020, trading was halted due to increased volatility for the first fifteen minutes of the trading day. See for example, “One year ago stocks dropped 12% in a single day. What investors have learned since then,” *CNBC*, March 16, 2021 and “Trading Halted Again as Coronavirus Wears on Wall Street,” *U.S. News*, March 16, 2020.

both Dr. Nye's event study model and the alternative event study model appear to find statistically significant reactions around this time period even when there is no new company-specific news.¹²⁷

72. In an attempt to control for this increase in market volatility around March 16, Dr. Nye chooses the method from the NERA paper that proposes moving the control period, the period used to calculate the expected returns and expected volatility, closer to the event being tested in order to use a control period that has "similar" volatility to the event.¹²⁸

73. Dr. Nye's initial event study from his first report used a control period of one year before March 16.¹²⁹ The market volatility, as measured by the VIX, was 83% on March 16, five times larger than the 17% average market volatility during the one-year control period used in Dr. Nye's initial event study. In the Nye Reply Report, Dr. Nye uses five different control periods in an attempt to control for the increased market volatility around March 16.¹³⁰ However, the average market volatility during all five of Dr. Nye's alternative control periods is still substantially below the record high market volatility on March 16. The table below shows the elevated market volatility on March 16 of 83% (as measured by the VIX) and the substantially lower average market volatility for each of the control periods used by Dr. Nye in both of his reports. The table also shows the associated p-values for the price reaction on March 16 under each model.¹³¹ As discussed above, the p-value is the chance that a price reaction of the same magnitude would be observed given the range of normal stock price volatility.¹³² Hence, a p-value greater than 5% would mean that the price reaction is not statistically significant at the commonly used 5% level. As shown in the table, as the control period shortens, the average VIX in the control period gets closer to but still nowhere near the VIX on March 16, 2020. Moreover, as the control period shortens, the p-value of the March 16 price reaction increases. Tellingly, the

¹²⁷ See for example, Allen Report, ¶¶88-95.

¹²⁸ Jovanovic, Branko, and Edward Fox, *NERA Economic Consulting*, "Testing for Materiality in Volatile Market," January 12, 2010.

¹²⁹ Nye Report, Exhibit 11A.

¹³⁰ All five control periods start on March 2, 2020 and last either two, three, four, five or six months.

¹³¹ Dr. Nye reports the confidence levels of Apache's excess returns, which as discussed above, are not the same as being confident that the given event had an impact.

¹³² See, for example, Freedman, David A., and David H. Kaye, "Reference Guide on Statistics," *Reference Manual on Scientific Evidence* (Washington, D.C.: Federal Judicial Center, 3rd ed., 2011) p. 250.

price reaction after March 16 using the control period with the highest average market volatility and the alternative event study model was not statistically significant.¹³³ Thus, Dr. Nye's "simple" adjustment is clearly not fully accounting for the record-high market volatility on March 16, 2020 and demonstrates that a full adjustment would yield no statistically significant price reaction.

Control Period	Control Period Dates	Market Volatility		Statistical Test (p-value)	
		During Control Period ¹	On 3/16/20	Nye Model	Alternative Model
<i>Nye Report (Initial)</i>					
1 Year Prior to Event	3/14/19 - 3/13/20	17%	83%	0.0% *	0.0% *
<i>Nye Reply Report</i>					
Start March 2020 - 6 Months	3/2/20 - 8/31/20	35%	83%	0.1% *	0.4% *
Start March 2020 - 5 Months	3/2/20 - 7/31/20	37%	83%	0.3% *	0.7% *
Start March 2020 - 4 Months	3/2/20 - 6/30/20	40%	83%	0.3% *	0.8% *
Start March 2020 - 3 Months	3/2/20 - 5/29/20	43%	83%	0.7% *	1.9% *
Start March 2020 - 2 Months	3/2/20 - 4/30/20	48%	83%	2.0% *	5.3%

Notes and Sources:
Data from Bloomberg L.P. and Dr. Nye's Turnover. ** indicates that the price reaction is statistically significant at the 5% level. CBOE Volatility Index (VIX) is used to measure market volatility.

¹ Calculated as the average volatility during the control period. Excludes event dates Dr. Nye excluded from his control period.

74. Dr. Nye completely ignores the three other methods mentioned in the NERA paper to control for increased market volatility. Contrary to the method Dr. Nye applies, the other three volatility adjustment methods do actually control for the market volatility on the alleged corrective disclosure date itself, thus more accurately controlling for the dramatic spike in market volatility on the alleged corrective disclosure date. Applying any of these three other methods results in *no* statistically significant price reaction following the March 16, 2020 alleged corrective disclosure. All three methods use the market's expectation of the Company-specific volatility on the event date to measure the price reaction's statistical significance. The first

¹³³ Note Dr. Nye claims that the alternative event study in the Allen Report does not have "higher explanatory power." However, Dr. Nye's own table in the Nye Reply Report shows that the alternative event study model's average adjusted R-squared of all dates during the Focus Period, was higher than Dr. Nye's event study model's average adjusted R-squared. See, Nye Reply Report, ¶77. Moreover, in a regression of Apache's daily returns over the Focus Period (excluding the COVID-19 period of volatility), the adjusted R-squared was higher using the industry and market indices the alternative event study model used than using the industry and market indices Dr. Nye's event study model used.

method proxies the Company-specific volatility using the implied volatility of the market index on the day before the event and the relationship between the Company and the market index during the control period. The second method proxies the Company-specific volatility using the implied volatility of the market index on the event date and the relationship between the implied volatility of the Company and the implied volatility of the market during the control period. The third method explicitly models the Company-specific volatility using a generalized autoregressive conditional heteroskedasticity (“GARCH”) model, which assumes that the Company’s excess return depends on the implied volatility of the market index.¹³⁴

75. In sum, the Allen Report showed that in the days around the March 16, 2020 alleged corrective disclosure the market volatility increased substantially in response to the beginning of the COVID-19 pandemic. Dr. Nye attempts to “resolve the issues” associated with the record-high market volatility on March 16 through a “simple” adjustment. However, Dr. Nye’s “simple” adjustment is clearly not fully accounting for the record-high market volatility on this day and demonstrates that a full adjustment would yield no statistically significant price reaction. Further, applying any of the three other methods outlined in the paper Dr. Nye relies upon similarly yields that there is no statistically significant price reaction after the March 16, 2020 alleged corrective disclosure.

F. The Nye Reply Report’s claims that the Allen Report’s big picture analysis is irrelevant are disingenuous and misleading - contrary to Plaintiffs’ allegation that “when the truth regarding Defendant’s fraud emerged,” Apache’s stock price was “decimated” and dropped by “93% from its high,” Apache’s stock price moved in-line with the E&P industry during the Focus Period

76. Dr. Nye claims that the Allen Report’s big picture analysis is irrelevant because the fact that Apache’s stock price moved in-line with the E&P industry “is entirely expected in an efficient market” and “the notion that, during the Focus Period, Apache’s stock price was suddenly more ‘in-line with the E&P industry,’ is nonsense.”¹³⁵ However, Dr. Nye’s claims are disingenuous and misleading. The Allen Report never claimed that Apache’s stock price was

¹³⁴ To implement these three methods, the VIX Index is used as the measure of the implied volatility of the market. The results are similar using the specifications in Dr. Nye’s event study model or the alternative event study model.

¹³⁵ Nye Reply Report, ¶56.

“suddenly more in-line” with the industry during the Focus Period. Instead, the Allen Report was responding to Plaintiffs’ claim that “when the truth regarding Defendants’ fraud emerged [...] Apache’s stock price was decimated” and had “an astonishing decline of 93% from its high during the Class Period.”¹³⁶ The Allen Report showed that, contrary to Plaintiffs’ claim that when the truth “gradually became apparent to the market, the price of Apache common stock fell precipitously,” as the alleged inflation “dissipated,”¹³⁷ there was no price reaction from any corrective information and no change in the market’s expectations about Alpine High’s reserves or the mix of oil and wet gas vs. dry gas during the Focus Period.¹³⁸ Instead, Apache’s stock moved in-line with the E&P industry during the Focus Period.¹³⁹

77. Dr. Nye claims that the Allen Report’s contention that Apache’s stock price decline was driven by changes in the E&P industry is contradicted by the Company’s own analysis. However, this is flatly untrue. Dr. Nye’s only support for this claim is an internal Company presentation from early 2020.¹⁴⁰ However, the internal presentation, including the chart from the presentation that Dr. Nye cites and includes in his report, explicitly notes that for the first half of the Focus Period, Apache’s stock moved with its peers, and for the second half, Apache’s underperformance was due to the decline in NGL and gas pricing¹⁴¹ – exactly the point the Allen Report made.¹⁴² The Allen Report further showed that for example, the stock price of Cimarex, another E&P company described by analysts as a “solid proxy for investor sentiment/concern on Waha pricing,” and was heavily exposed to Waha Hub natural gas prices and NGL prices, declined in 2019 as a result of weak commodity pricing.¹⁴³

78. Moreover, in the Allen Report I also showed that when commodity prices recovered after the Focus Period ended, Apache resumed its previously curtailed production and

¹³⁶ Complaint, ¶2.

¹³⁷ Complaint, ¶301.

¹³⁸ See for example, Allen Report, ¶¶97-102.

¹³⁹ Allen Report, ¶¶103-106.

¹⁴⁰ Nye Reply Report, ¶¶57-59.

¹⁴¹ APACHE_00000751-85 at 67.

¹⁴² See for example, Allen Report ¶¶107-119. See also, Piper Sandler analyst report, dated June 27, 2019 (“Over the last 12 months, we see two primary trends having an outsized impact on APA relative to the broader group: the collapse in Waha pricing, and Suriname expectations.”).

¹⁴³ Piper Sandler analyst report, dated June 27, 2019 and Allen Report, ¶119.

drilling at Alpine High.¹⁴⁴ This is consistent with the Allen Report's big picture analysis and strong evidence that there is no price impact from the alleged misrepresentations. Dr. Nye has no response to this analysis.

A handwritten signature in black ink, appearing to read "Lucy P. Allen". It is written in a cursive style with a horizontal line underneath it.

Lucy P. Allen

¹⁴⁴ Allen Report, ¶¶120-125.